

Amateur Radio



April 1998

Volume 66 No 4

Journal of the Wireless Institute of Australia



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- A Short History of Electronic Communication
- A Six to Two Receiving Converter

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Editorial

Editor

Bill Rice VK3ABP*
Production Manager
Bill Roper VK3BR

Senior Technical Editor

Peter Gibson VK3AZL*

Technical Editors

Evan Jarman VK3ANI*
Gil Sones VK3AUI*
Don Graham VK6HK

Contributing Editors

Ron Fisher VK3OM*
Don Jackson VK3DBB*

WIA News Editor

Roger Harrison VK2ZRH

Proof Readers

Allan Doble VK3AMD
Jim Payne VK3AZT
Graham Thornton VK3IY
John Tutton VK3ZC
Rowland Bruce VK5OU

*Publications Committee member

Production

Administration, Advertising, Drafting,
Production

vk3br Communications Pty Ltd
3 Tamar Court, Mentone VIC 3194

Typesetting and Printing

Industrial Printing and Publishing Pty Ltd
122 Dover Street, Richmond, VIC 3121.

Mail Distribution

Mail Management Australia Pty Ltd
6 Garden Boulevard, Dingley VIC 3172

New Advertising

Eyestone & Keith Toolset
Union Publicity Service Pty Ltd
PO Box 282, Toongabbie NSW 2146
Telephone: 1800 654 181 - 02 9831 1299
Fax: 02 9831 6192

Amateur Radio Correspondence

All contributions, correspondence, Hamads
and queries concerning the content of
Amateur Radio should be sent to:

Amateur Radio

vk3br Communications Pty Ltd
3 Tamar Court, Mentone VIC 3194
E-mail: vk3br@c031.aone.net.au
Phone and Fax: 03 9584 9828

Mobile: 0418 534 138

Business Hours: 9:30 am to 3:00 pm weekdays

Amateur Radio Delivery

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Amateur Radio should be sent to:

Amateur Radio

WIA Federal Office

PO Box 2175

Caulfield Junction VIC 3161

Registered Office:

3105 Hawthorn Road

Caulfield North VIC 3161

Telephone: 03 9528 5962

Fax: 03 9523 8191

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HMAS Vampire at the Australian National Maritime Museum in Darling Harbour, Sydney.
See page 18 for details of amateur radio station VK2CCV aboard HMAS Vampire.

BACK ISSUES

Available direct from the WIA Federal Office, only until stocks are exhausted, at \$4.00 each (including postage within Australia) to members.

PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk or via e-mail are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. A pamphlet, "How to Write for Amateur Radio", is available from vk3br Communications Pty Ltd on receipt of a stamped, self addressed envelope.

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3/105 Hawthorn Rd, Caulfield North, Vic 3161

All Mail to:

PO Box 2175, Caulfield Junction, VIC 3161
Telephone: 03 9528 5962 Fax: 03 9523 8191

Business Hours: 9.30 am to 3.00 pm on weekdays

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■ Comment

Editor's Comment

MIR Mania

The biggest event happening in our hobby currently is the many thousands throughout the world trying to make that elusive contact with the orbiting Russian space station MIR.

The mission, which continues until next month, is of intense interest to Australians because on board is the so-called "South Australian Astronaut" and now cosmonaut, Andy Thomas VK5MIR/KD5CHF. He featured on the cover of February's *Amateur Radio* magazine.

I have joined the many trying to make voice and packet contact with MIR since late February but, alas, at press time have had no success with either mode.

However, the inability to log a personal contact has not greatly lessened the enjoyment of experiencing this historical event. By sandbagging, a lot can be gleaned through what Andy is telling those he does contact.

On about half a dozen passes over Australia, when Andy has been on the microphone, the signal was R5 and S7-9 with excellent modulation. He has, among other things, talked about the brilliance of the Aurora Australis (southern lights); he was over the Southern Ocean when he saw the event. Later Andy said: "It has a green glow and it was really amazing."

He also plans to take photographs of Australia from MIR and, like all good photographers, said: "I am waiting for the right lighting.... it's not quite bright enough yet."

Andy has mentioned his fellow crew members and veteran MIR cosmonauts, Flight Commander Talgat Musabayev and Engineer Nikolai Budarin, fixing a solar array outside the craft.

During a contact with a VK5 he accepted an invitation to one day join the locals at a barbecue to enjoy a glass of red wine, and asked his contact to have a glass on him in the meantime.

During contacts with VK5s he has shown his local knowledge and even talked about his bicycle exploits as a young man living in the Adelaide area. In talking to a VK7 in Burnie he recalled having worked at the nearby Savage River mine 25 years ago.

The crew's schedule is based on Moscow time, which is three hours ahead of UTC, and Andy has explained that his working day is around 12 hours long from 9 am to 9 pm.

Andy has admitted that prior to becoming a space traveller he had no idea that so many amateur radio enthusiasts existed.

He sounds like a veteran on the microphone and gives the impression that his amateur radio involvement won't end when he returns to earth. Welcome to amateur radio, Andy!

Jim Linton VK3PC

Guest Editor

ar

■ News

WIA News

Roger Harrison VK2ZRH,
Federal Media Liaison Officer

Romance of Morse the Key to New Interest in Amateur Radio

Publicity in a suburban Sydney newspaper about a group of local amateurs activating the Overland Telegraph Station museum at Alice Springs during Heritage Week this month sparked an extraordinary public response.

The story, published in the *Parramatta Advertiser*, highlighted the coming expedition of radio amateurs and Vietnam veterans from Sydney to Alice Springs for the event, as told by organiser, Jim Walker VK2JW.

The self-funded group of 16, including five amateurs and some members of the Sydney Morsecodians Fraternity, will set off in four-wheel drive

vehicles, touring outback areas of NSW, South Australia and the Northern Territory en-route to Heritage Week in Alice Springs.

The Overland Telegraph Station was restored to working condition by the Sydney Morsecodians Fraternity in 1989 and operates as a self-funded museum.

The museum's telegraph station will be used to send some 3000 telegrams by Morse code over a 10-day period spanning the Heritage Week event. The telegrams will be received, via a direct link, at the National Science and Technology Centre in Canberra.

Following publication of the story,

Jim received a series of calls from people attracted by "... the romance of Morse code." He was interviewed in following weeks on a series of regional and local broadcast station programs and by ABC TV in the Northern Territory. This publicity brought further response from members of the public keen to learn that Morse code was being kept alive by enthusiasts and to find out how they could get their amateur licence and use Morse code themselves.

The *Parramatta Advertiser* story was arranged by WIA Federal Media Liaison Officer, Roger Harrison VK2ZRH.

AX*ITU Calls Signs Available for World Telecommunication Day

Special event stations signing AX*ITU will be heard once again on 17 May this year, for the annual World Telecommunication Day which commemorates the founding of the International Telecommunications Union (ITU) in Paris in 1865.

The Australian Communications Authority (ACA) granted use of the AX*ITU series call signs for use by WIA Divisions during World Telecommunication Day, in advice to the WIA on 12 March.

The AX*ITU stations may operate between 0000 and 2400 UTC on the day, which for stations in the Eastern states is between 1000 EAST on 17 May and 1000 EAST on 18 May. Local times will be different for stations in the central and western time zones. This is a change from last year, when operation was permitted for the 24 hours local time on 17 May.

The amateur radio fraternity across the world joins in to celebrate World Telecommunication Day by operating special event stations, for which unique QSL cards are issued for confirmed contacts.

Last year, AX2ITU and AX6ITU were activated by the NSW and West Australian Divisions, respectively. This year, at least the NSW Division's AX2ITU station will be active, but no advice had been received by WIA News about other Divisions' plans to sponsor AX*ITU stations.

More details about World Telecommunication Day can be found on the ITU's Web site at www.itu.int.

More Publicity for Amateur Radio

WIA South Australian Division President, Ian Hunt VK5QX, was interviewed for a segment about astronaut and radio amateur, Andy Thomas KD5CHF/VK5MIR, on Channel 9's national morning *Today* show in March.

Running for some seven minutes, the segment included an interview with Andy's father, who lives in Adelaide, and a simulated contact between VK5MIR and VK5QX.

■ Test Equipment

A Dip Oscillator, Crystal Checker and Signal Source

Drew Diamond VK3XU
45 Gatters Road
Wonga Park VIC 3115

Next to a multimeter and an SWR bridge, the dip oscillator is arguably one of the handiest devices to be found in the amateur's shack. With skilled application, the radio worker may determine the resonant frequency of tuned circuits, find the value of unknown pF capacitors and micro-henry inductors, sniff powered RF circuits, and measure some antenna and transmission line characteristics. Nearly all of the standard amateur radio handbooks have details on how to apply this versatile instrument.

Mysteriously, there does not appear to be a commercially-made gate dip oscillator (GDO) available locally at present. So, here are details of a home-made dipper for you to try. Frequency range is from 1.6 MHz to 32 MHz in three coil ranges. The device also functions as a rather good crystal checker, where crystal activity is directly indicated on the meter (even my most reluctant "re-grind" fires up in this circuit).

An internal buffer amplifier is included so that the oscillator may be used as a crystal or free-running signal source where required, without having to go to the trouble of coupling directly to the dipper's coil, thus avoiding any possible errors due to frequency pulling. The 0.5 mW signal output may drive a frequency counter, or impedance bridge for instance.

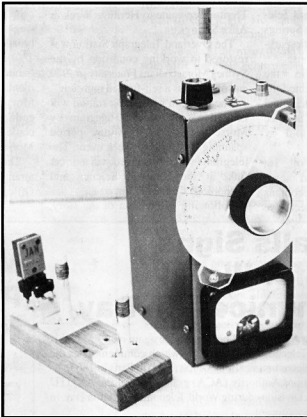


Photo 1 - The Dipper and coil set.

Circuit

A Colpitts configuration at Q1 maintains oscillation in the tuned circuit tank formed (mainly) by the dual-gang capacitor and coil, these being effectively connected between gate and drain of the MPF102, an N-channel FET. When the circuit is oscillating, a DC potential results from rectification of the gate signal by the clamp diode, thus causing a direct current to flow via the diode, 33 k resistor, 100 k pot and 50

micro-amp meter. The amplitude of current indicated is proportional to the strength of oscillation.

If the coil of the oscillating dipper is coupled to a passive tuned circuit whose resonant frequency matches that of the oscillator, a "dip" in gate signal will be observed. Most traditional radio books simply state that energy is "absorbed" from the oscillator by the passive circuit, thereby causing the observed dip. Rather, the only thing that does any absorbing is the resistive (or loss) component of the passive circuit, whose

pure inductance and capacitance actually return energy back to the oscillator by mutual coupling, which arrives out of phase with the original signal. I believe it is this phenomenon which causes the apparent reduction in the strength of oscillation.

The marks of a good dipper are good frequency stability, freedom from false dips (generally caused by unwanted resonances within the oscillator), constancy of meter indication across each coil range, sufficiently "strong" oscillation which is not easily damped, and a good clear dip when coupled to a passive circuit. The popular Colpitts configuration satisfies all these requirements.

In this iteration, the main source of possible false resonance problems is in the RF choke (RFC) which feeds a 9 V supply to the drain of Q1. Locally available values of 1, 2.2 and 2.5 milli-henry, both moulded and pie style,

were tried, and found by experiment to give satisfactorily smooth operation throughout the specified range. However, a 1 milli-henry Toko RFC gave best results.

A 1 pF capacitor lightly couples the oscillator signal to the gate of the buffer amplifier at Q2, another MPF102. The sinusoidal signal at the drain of Q1 is reasonably well preserved at the drain of Q2, where it is presented to the output connector.

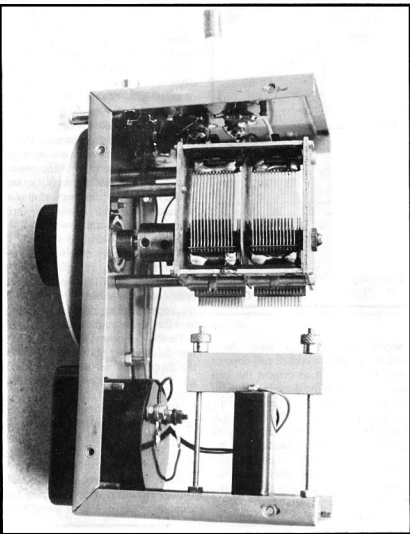


Photo 2 - Internal view of the Dipper.

The circuit was found to operate best, and give clearest dip indications, at about 8.5 V, which is ideally supplied by an ordinary 9V "transistor" battery. Current drain is about 5 mA.

Construction

As you can see, no efforts toward miniaturisation have been made. My home-made aluminium box measures 185 x 100 x 80 mm. These dimensions were largely dictated by the "common-as-mud" dual-gang broadcast variable capacitor (see Parts below) which was on hand. A physically smaller capacitor would naturally yield a more compact package if preferred. However, keep in mind that a small instrument will have a

smaller, and perhaps harder to read and calibrate, dial.

Circuit layout is not especially critical. A pair of ordinary Dick Smith or similar insulated banana sockets spaced 0.75 inch (a standard) are used for the plug-in coil connections, which are located centrally in the top of the case. A ground-plane consisting of a piece of plain printed circuit board or tin-plate may be located under the sockets, and held captive by these. Use point to point component wiring for the oscillator and buffer. Clip passive component leads as short as reasonably practicable.

You will find that sufficient parts have one lead soldered to chassis "ground" to provide adequate mechanical support for

the completed circuit. Note that the variable capacitor lugs should be connected with flexible wire, such as copper braid. The 100 k sensitivity pot, on/off switch and output connector should be located in the top panel adjacent to the coil as shown.

To give good manual control of frequency, a planetary reduction drive between capacitor spindle and dial is recommended. You have a choice of two dial styles; the dial disc rotates under a fixed Perspex cursor (shown in Photo 1), or the dial disc is fixed to the case and the Perspex cursor moves. The aluminium disc shown has a diameter of 110 mm. It should be given one or two coats of white undercoat preparatory to calibration. Reference 3 contains details of a neat space-saving idea, where the builder has made a drum dial to fit inside the case of a UHF dipper.

The 8 mm plastic coil formers were cut from the outer tubes of some new Biro™ brand ball pens purchased for the purpose from a local newsagent (see coil table for details). Drill two 1 mm holes across each coil form diameter as shown in the drawing. There is sufficient overlap between ranges for a turns tolerance of \pm two turns for L1 and L2, and \pm one turn for L3, so don't be too concerned about those odd half-turns which go through the holes.

Perspex, polycarbonate, or other low loss insulating material is ideal for the coil bases. Drill a hole in the centre of the base to take the formers. For best strength, the form must be a snug fit in the base. I suggest that you drill a few thousands-of-an-inch undersize, then hand-ream to final diameter.

The banana plugs may be glued or threaded in as desired. Pre-tin the plugs before they are inserted into the Perspex, otherwise the greater heat required in soldering the coil wires may damage the thread or melt the glue. Wind the coils before they are super-glued into the bases. When soldering the coil connections, lightly grip the plugs in a vice to act as a heat-sink. The supplied plug tops are not required.

A battery holder is recommended. That shown was home-made from scraps of insulating material. Some suppliers do stock 9V holders, however.

If the crystal check function is desired,

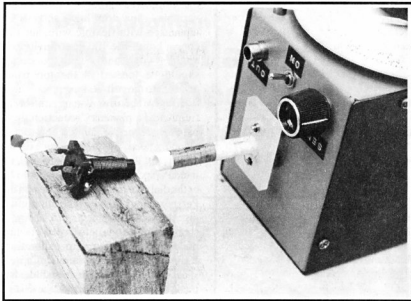


Photo 3 - Dipping a plain coil.

make an additional base and banana plug assembly to which may be soldered, in parallel, crystal sockets to take style-D, FT-243 and any others that you may require. The very old DC-11 and 0.75 inch style units may be plugged directly into the banana sockets of the dipper.

Calibration

Plug in each coil and check that the meter gives at least full-scale (use the sensitivity potentiometer to adjust to about 45 micro-amp) deflection across each range. The meter indication should be reasonably constant, with no drop-outs or false dips (you may get, with some makes of RFC, one or two very broad "hollows" - these should not be a problem).

Ideally, some sort of temporary dummy cursor should be made up which has holes through which the calibrations may be marked. If you have access to a frequency counter, connect a coax cable between the dipper output and your counter input. Check that each range generates the frequencies specified, with some overlap.

No counter? Plug a clip-lead into the input of a general coverage receiver. In the shack, you should be able to hear the dipper signal on the receiver. Simply tune the receiver and dipper to appropriate calibration points. When the

ranges and over-lap have been confirmed, apply a coat of coil-dope or clear nail varnish to cement the coil windings. When the dope is dry, mark salient calibration points upon the scale using a fine black pen, or 0.4 mm pencil. I used HB pencil, which can easily be erased should a mistake occur. Mark the 100 kHz (0.1 MHz) increments to about 5 MHz. Above 5 MHz only the whole-numbered MHz need be marked. Do not try to squeeze in lots of fractional calibration points, otherwise the dial will be too cluttered.

In practice, interpolation will provide sufficient accuracy. When calibration is complete, the dial should be removed and given one or two coats of clear lacquer to protect the markings. You should find that the lacquer also darkens the pencil calibrations and so improves contrast.

Operation

To measure the resonant frequency

of a parallel LC tank, the dipper's coil is placed near the passive coil, initially spaced about 10 mm distant. Depending upon physical constraints, the coils may be end-on (Photo 3) or side-on to obtain a dip. Set the sensitivity pot for a reading of about 90 % of full-scale. Sweep the dial around the estimated resonant frequency until a dip is found.

To improve accuracy, increase the coil spacing to the point where the dip is just perceptible. If the "Q" of the passive circuit is low, the dip may be very shallow, so close observation may be necessary. Large coils, such as those used in couplers and power amplifier tanks, may be measured similarly by placing the dipper coil near to, and parallel to, one end of the passive coil.

If the unknown tank has a variable component, it is sometimes easier to set the dipper to the required frequency, and alter the passive variable.

Parallel connected LC circuits using toroidal coils may be checked by placing the dipper coil in the one-turn loop effectively formed by the connection (Photo 4).

When investigating energised LC circuits, best sensitivity is generally obtained by looking for a rise, or flick, in meter reading as the oscillating dipper is swept over the expected frequency.

Take great care around high-voltage circuitry. Wrap insulating tape around the dipper coil if there is any

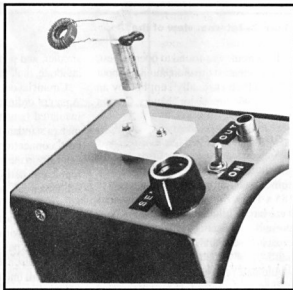


Photo 4 - Dipping a toroidal coil.

To check crystals, the dial must be at the high frequency end (minimum C). Plug in the crystal, using an adapter if necessary. The meter indicates activity. In ladder filter work, for instance, we can check for relative frequency and activity, and match sets accordingly.

If you are new to radio, you may be wondering where to buy a dual 415 pF per gang variable capacitor? Never fear, they are by no means rare items. Quite

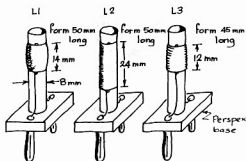
If you genuinely cannot locate a variable capacitor, then do please write to me. With this project in mind, I have been quietly collecting suitable units at hamfests and from radio mates, and can send one to you at very nominal cost. Mention if you need a 3/8 shaft to 1/4 inch reducing coupler. I also have some spare Toko 1 milli-henry RFCs. The

1. *Radio Communication Handbook*; RSGB (any edition).
2. *The ARRL Handbook* (any edition).
3. *Test Equipment for the Radio Amateur*; Smith, G4FZH, RSGB.
4. "A Dip Meter using the Lambda Negative Resistance Circuit"; Butler, VK5BR, *Amateur Radio*, Jan '97.
5. "A Gate Dip Oscillator or GDO"; Eunson, VK4SO, *ARA Vol 8 No 13*.
6. "A Simple Dip Meter"; Diamond, *Amateur Radio*, June '90.
7. *Servicing with Dip Meters*; Lenk, Foulsham-Sams.

9V BATTERY POWERED MONO

Diagram of a 9V battery-powered mono amplifier circuit. The circuit includes a 50V transformer with 100n and 100p taps, a 33K series resistor, a 1N934 diode, and a 1N934 diode. The main amplifier stage uses a 6F6 tube (labeled 6F6) and a 6F6 tube (labeled 6F6). The output is taken from the 6F6 tube. The circuit is powered by a 9V battery. The diagram also includes a 3D perspective view of the 6F6 tube, showing its dimensions: 50mm long, 14mm diameter, and 8mm base diameter. The tube is labeled L1. The diagram is titled '9V BATTERY POWERED MONO'.

—VK3XU—



L3 : 10 ~ 33 MHz

1.4 μ H; 17 turns single la
close wound #22 B $\frac{1}{2}$ 3 (0.1
enam.

Amateur Radio, April 1998

■ Receivers

A Six to Two Receiving Converter

Peter Parker VK1PK
7/1 Garran Place
Garran ACT 2605
e-mail: parkerp@pcug.org.au

Introduction

The availability of crystal oscillator modules used in computer equipment has simplified the construction of converters for the amateur bands. An example is the unit described here.

Allowing six metre reception on a two metre multi-mode transceiver, this project should appeal to both the newcomer and the seasoned DXer. Those curious about six metres can build this converter to explore 50 MHz before deciding whether to buy a transceiver. More experienced operators could use this unit along with a two metre transceiver or scanner to receive beacons and other signals that provide early warning of an impending opening.

Converting 48-52 MHz to 144-148 MHz, the converter is intended mainly for the SSB/CW operator. However, coverage of the top half of six metres, where FM is the dominant mode, should be possible if your two metre transceiver or scanner tunes between 148 and 150 MHz.

Circuit Description

The basic design of the converter is similar to that described in Reference 1. It makes use of a 47.98 MHz crystal oscillator module. The 95.96 MHz second harmonic from the module is filtered by a pair of tuned circuits. This local oscillator signal is fed to an NE602 mixer. A BF981 RF pre-amp contributes to the converter's high sensitivity – connecting a metre-long wire antenna will produce a large increase in received noise.

Construction

The mixer and RF pre-amp stages are constructed on an etched printed circuit board housed in a small die cast box. To save drilling, the oscillator and mixer

components are soldered straight to the etched copper side of this board. The die cast box is enclosed in a larger case to allow space for the oscillator/regulator stages and the possible later addition of a transmitter or transmit converter.

The oscillator/regulator is also built on a small piece of printed circuit board material, but the components are not soldered to it. Instead, the parts are mounted on a small piece of perforated matrix board. PC board pins are used to fasten the matrix board to the PC board.

Build and test the oscillator portion first. An FM broadcast receiver and simple RF probe (preferably with an analogue meter) can be used to align this stage. However, other instruments such as a dip meter, frequency counter and a spectrum analyser may also come in handy.

L6 and 7 are wound on a 6.5 mm drill bit. The wire thickness is not critical – the wire used in the prototype was salvaged from a Philips FM1680 VHF transceiver. The 25 pF trimmer capacitors used are of the 'beehive' type from the same source. Note that both 100 nF capacitors are mounted very close to the 7805 regulator.

Tune your FM receiver to 96 MHz. Applying power to the oscillator should produce a carrier signal in the receiver. Using either the RF probe (connected to the L6 tap) or the FM receiver, adjust the trimmer capacitors for maximum output. Note that these settings will be interdependent.

Construction of the mixer stage can now commence. Like L6 and L7, L5 is self-supporting. It is wound on a 4 mm diameter drill bit. Bare wire may be used for this coil. If available, use a dip meter to adjust L5's trimmer to resonance on 146 MHz.

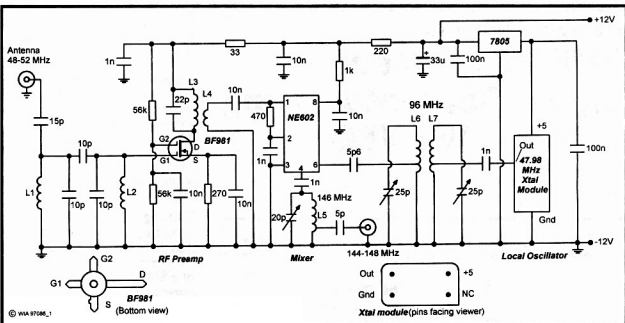
With a low-power 50.2 MHz signal applied to pin 1 of the NE602, apply power and connect the two metre receiver. The 50.2 MHz carrier should be heard when the receiver is set to approximately 146.160 MHz. Success in this test indicates that both the oscillator and mixer stages of the converter are working.

A previous version of this converter had a 14 MHz IF. This allowed 50 MHz reception on an HF valve communications receiver. The gain of this set was lacking, and the BF981 RF stage was required for adequate sensitivity. Since then, the converter was modified to have a tuneable IF of around 146 MHz, but the BF981 RF preamplifier was retained. This makes the converter's gain very high.

Those intending to use the converter with a proper antenna for six metres should first try the converter without the BF981 preamplifier stage (though the front-end filter consisting of L1 and L2 should be retained for high rejection of out of band signals). If sensitivity is adequate, there will be no need to include this stage. For our purposes, adequate sensitivity means that connecting a receiving antenna caused a significant increase in noise from the two metre receiver. Apart from the simplicity of not adding the preamplifier, performance in the presence of strong local signals will be better when the gain of the converter is limited to the minimum required to provide good sensitivity.

The main job in building the pre-amp stage is in winding L1, L2 and L3/L4. These inductors are close wound on 1/8" slug-tuned formers. Use enamelled copper wire (gauge about 0.4 to 0.5 mm) for these coils.

Because of its high gain, the preamplifier stage may self-oscillate if precautions are not taken. Measures to ensure stability include using short, direct connections and positioning L3/4 well away from L1 and L2. Provision should be made for an earthed metal partition between these coils should it be found necessary. It is also desirable that coils be some distance from the lid of the box to prevent them from being detuned when the lid is attached.



Schematic diagram of the six to two receiving converter.
L1, L2 - 7 turns close wound on 1/8" slug-tuned former.
L3 - 7 turns close wound on 1/8" slug-tuned former
L5 - 6 turns 4 mm diameter, 10 mm long, tap 1.5 turns from ground.
L6, L7 - 6 turns 6.5 mm diameter, 12 mm long, tap 1.5 turns from ground, separation between L6 and L7 is 5 mm.

Operation

Final adjustment consists of peaking L1, L2, L3/4 and all trimmer capacitors for strongest received signal on a weak 50 MHz transmission. Initially use a local source to assure a sufficient signal for adjustments to be made. Then experiment with a more distant signal (perhaps from a beacon or another amateur) to test the converter's sensitivity. Note that there is some interdependence between the settings of L1 and L2. Also, if the shielding or separation between L1 and L2 and L3/L4 is insufficient, oscillations may be heard while adjustments are being made.

Anything from a few metres of wire to a multi-element beam will serve as a receiving antenna. Because it forms a quarter wave on six metres, a 5/8 wavelength whip for 144 MHz is ideal.

Results with this converter have been pleasing. Strong signals from both VK4 and VK5 were heard during last Summer's sporadic-E season. During the last sunspot cycle, when the first version of this converter was completed, signals from Japan, New Zealand and

Eastern Australia were heard with nothing more than a G5RV-type antenna being used.

Further Thoughts

By adding an extra mixer and linear amplifier stages, it should be possible to use the converter described here as the basis of a six to two metre transverter. Alternatively, if CW-only operation is required, a simpler approach may be to build a "trans-converter", that is a transmitter and receiving converter in the

one box. A station consisting of a two metre multi-mode transceiver, the receive converter featured here and a simple four or five transistor CW transmitter featuring a VXO would be a good combination for the CW operator wishing to work DX on six.

References

1. Diamond, D - Receiving Converter For Two Metres, *Amateur Radio*, September 1996.

Making News With News

The WIA Queensland Division's weekly news service, *Qnews*, has broken new ground in the delivery of news to Division members and the amateur radio fraternity at large.

They pipped the American Radio Relay League (ARRL) to the post earlier this year in providing an *Internet audio broadcast service*. This can be accessed at www.wiaq.powerup.com.au/realaudio/qnews.htm. This allows amateurs and computer/Internet enthusiasts to actually hear an amateur radio news broadcast - the same as transmitted weekly by the QLD Division station, VK4WIA.

Qnews editor and presenter, Graham Kemp VK4BB (a broadcaster by profession), takes pride in being "first, fast and factual" with *Qnews*.

Qnews was first with an amateur radio news service on Teletext (years ago!) and the first to initiate *regular news swaps* with overseas amateur societies, last year.

■ Repeater Link VHF/UHF Tuneable Signal Generator Using a 72-74 MHz VFO

Will McGhie VK6UU
21 Waterloo Crescent, Lesmurdie 6076
Packet: VK6UU@VK6BBR
E-mail: will@vale.faroc.com.au

Modified Signal Generator

January *Repeater Link* contained an article on a VHF/UHF tuneable signal generator using a 29 MHz VFO oscillator circuit. Clive VK6CSW has taken this design and produced his own version using a different oscillator design and a different fundamental frequency of 72 to 74 MHz. Rather than go into too much detail, as most of the points were discussed in the January

article, here is a brief description of the circuit and design concept from Clive VK6CSW.

The Design

When working at VHF and UHF we need to be very conscious of the effect of small changes in component values. This version uses the second harmonic of an oscillator tuneable from just below 72 MHz to just above 74 MHz. Assuming that the coil has an inductance of 0.25 μ H, the total parallel capacitance to

resonate at 72 MHz is about 19 pF. To raise the frequency to 74 MHz requires the capacitance to be reduced by only 1 pF.

Temperature Stability

The circuit is surprisingly stable. The oscillator only drifts for a few minutes after switch on and from then on remains within a few kilohertz. Ceramic NPO capacitors have been used along with some temperature compensation ceramic capacitors to minimise temperature drift.

Tuning

The 1 k pot gives a tuning change of about \pm 25 kHz, more than adequate to trim out any slight drift, while the 2.4 and 10 k resistors at each end of the 50 k coarse-tuning pot are used to trim the exact tuning range and will need to be determined by experiment.

The 10 k resistor should not be reduced! Its purpose is to keep the tuning voltage high enough so the capacitance change with voltage remains reasonably linear. Note that this pot is not a multi turn pot. In operation with a light touch,

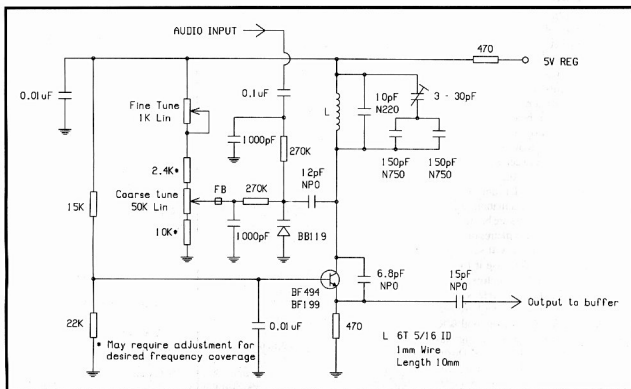


Fig 1 - Schematic of the VK6CSW signal generator 72 - 74 MHz VFO. (Drawn by VK6UU)

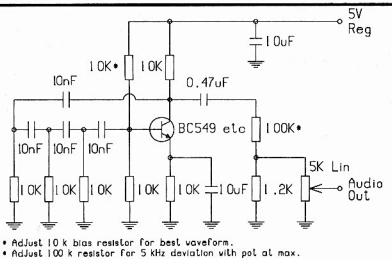


Fig 2 – Schematic of the VK6CSW 1.2 kHz audio oscillator.
(Drawn by VK6UU)

finding the right frequency is not too difficult with a direct drive pot. It also allows for easy application of a dial. I used a Philips Beehive capacitor across the inductor to set the frequency, as these prove very stable. However, whatever you find to be stable can be used.

Buffer Circuit

The buffer circuit used was basically that described in January *Repeater Link*, except the coupling capacitor out of the oscillator was reduced to 15 pF and the output capacitor into the attenuator reduced to 1.5 pF. Note also that the supply voltage is five volts rather than the nine volts used in the January circuit.

Construction

It is most important to shield the oscillator to prevent leakage. Use a box within a box along with feed-through capacitors. The assembly can be made physically quite stable. Even picking up and shaking results in negligible change of frequency. Some microphonics can be heard if the unit is tapped due to the coil moving. Silastic® reduces this effect.

The audio input only requires about

20 mV for 5 kHz deviation. A simple audio oscillator, such as a one transistor phase shift oscillator, can be used and the circuit is included as Fig 2.

Pagers Pagers Pagers

While looking at the ACA's Internet Web site the other day I did a search of how many transmitters there are on 148.0125 MHz. This is the lowest pager frequency, only 12.5 kHz above the top end of our 144 to 148 MHz band. The number came out at 234! That's right, there are 234 pagers on just that one frequency alone in Australia. No wonder we have interference problems.

40 m SSB Gateway

A submission, along with a licence application, has been completed and sent to the ACA, to license a 40 m SSB gateway to a two metre repeater in Perth. Amateurs with the full licence grade on 2 m, along with the correct CTCSS tone, will be able to contact other amateurs on 40 m SSB. We await a response from the ACA.

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■ Technical

Technical Abstracts

Gil Sones VK3AUI
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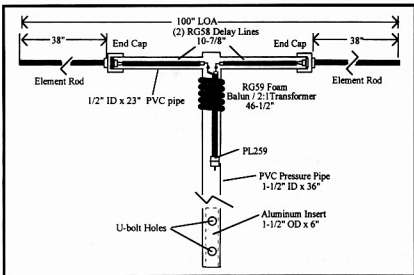


Fig 1 - Two metre extended double zepp antenna.

PVC Extended Double Zepp

The extended double zepp is a useful two metre side-mount antenna. A simple to construct version using PVC pipe was published in the Summer 1997 edition of *Communications Quarterly*. The author was Rick Littlefield K1BQT.

The antenna is intended to be side mounted and should be oriented so that the resulting null due to the presence of the mast is not in a wanted direction. The parts are all readily obtainable, although substitutions for those locally available will be required. Plumbing supplies, coaxial cable, aluminium rod and hardware are all reasonably universal so that substitutions should not be difficult.

Antenna construction is shown in Fig 1. The delay lines are shown in Fig 2 and were made out of Radio Shack/Tandy RG58 coaxial cable. The centre section housing the delay lines is a 23 inch long piece of 1/2 inch ID PVC water pipe. The support is a 36 inch long piece of 1.5 inch ID PVC pressure pipe. An insert of 1.5 inch OD aluminium tube is used at the

mounting point to resist crushing by the U bolt.

Element tips are made of 3/16th inch aluminium rod. These are threaded for mounting. The mounting of these rods onto the ends of the centre section of PVC pipe and the connection of the delay lines is shown in Fig 3. The balun and feedline connection are shown in Fig 4. The balun and 75 ohm transformer are made from a 46.5 inch length of 75 ohm RG59 foam cable.

Some substitution may be necessary to use locally available plumbing but a close copy of the design should be possible. The author obtained a 1.1:1 VSWR at resonance and less than 1.5:1 VSWR throughout the band.

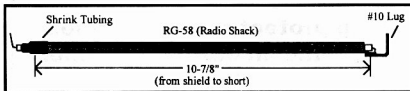


Fig 2 - Delay line construction detail.

QRP Transceiver

A neat QRP transceiver combination appeared in *CQ*, August 1997. The article appeared in the *World of Ideas* column of Dave Ingram K4TWJ. The transceiver was composed of the Micronaut Transmitter of Dave K4TWJ, originally published in *CQ*, March 1997, and the MRX-40 receiver of Steve Bornstein K8IDN. The MRX-40 is a kit produced by Steve K8IDN and the circuit was published in *CQ*, August 1997 and *QST*, September 1997.

The receiver circuit is shown in Fig 5 and the transmitter is shown in Fig 6. The design is for 40 metres but can be modified for other bands. Send/receive switching is up to the constructor. The receiver tuned circuit for 30 metre operation was given as: $C1 = 68 \text{ pF}$, $C2 = 330 \text{ pF}$, and $L1 = 4.7 \text{ microhenry}$. Kits with small circuit boards are available in the USA.

The oscillator signal from the MRX-40 is picked off pin seven of the NE612 and coupled to the PN2222 base by a 47 pF capacitor. For transmitter operation with 12 volts, the PN2222 emitter resistor may need to be reduced from 120 to around 70 ohms and you may need to parallel two PN2222s. Output for a nine volt supply should be around 100 milliwatts, rising to 350 milliwatts with the 12 volt modification.

Remember this is an experimental radio and some tweaking and component changes may be needed in transceiver operation.

Return Loss Bridge

Return loss is a different way of expressing SWR. Return loss is the power taken by the load and is given in decibels. A perfect match or 1:1 SWR sees zero reflected power and the power is absorbed by the load which gives infinite return loss. A 1.22:1 SWR gives 20 dB return loss and an infinite SWR gives 0 dB return loss. A 2:1 SWR is a return loss of 9.5 dB.

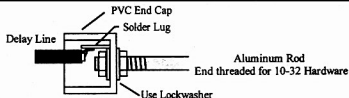


Fig 3 - Element mounting detail.

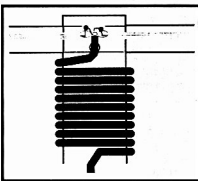


Fig 4 - Balun choke and feedline connection detail.

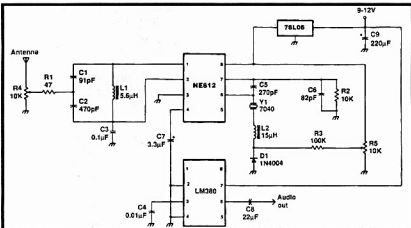


Fig 5 - MRX-40 receiver.

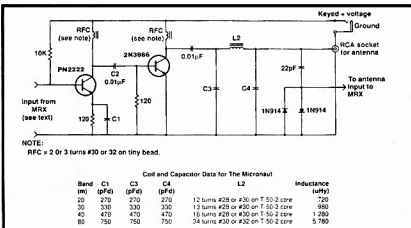


Fig 6 - Micronaut transmitter adaptation for operation with MRX-40.

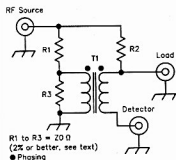


Fig 7 - Return loss bridge schematic.

components with zero length leads are used in construction. The circuit is given in Fig 7. The transformer is 10 turns No 30 AWG bifilar wound on an Amidon FT-23-77 core. The resistors should be 1% tolerance and be of carbon composition or metal film construction.

One technique to get 50 ohm resistors is to use parallel surface mount 100 ohm resistors. This gives short leads and a 50 ohm resistance.



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US Amateurs Soon Free to Roam in Europe

Amateurs from the United States will soon be able to travel in Europe and operate on the air without needing to apply for reciprocal licences.

The European Conference of Postal and Telecommunications Administrations (CEPT) has granted a US government request to participate in the European "guest license" arrangements which prevail in most European countries, according to the American Radio Relay League's *ARRL Letter* of 13 February.

Holders of a CEPT-recognised amateur licence can operate in CEPT guest licence-participating countries, under CEPT Recommendation T/R 61-01, without having to apply for a formal reciprocal licence.

In the third quarter of last year, the US Federal Communications Commission (FCC) proposed amending the Amateur Radio rules in that country to make it easier for amateurs holding a CEPT licence or an International Amateur Radio Permit (IARP) to operate during short visits to the US.

Under the proposed arrangements, a US Technician licence would be recognised as a CEPT Class 2, VHF-only, licence with full privileges above 30 MHz. Full privileges on HF and VHF would be allowed to holders of US Tech Plus through Extra Class licences. US Novices would not be eligible, according to the *ARRL Letter*.

The ARRL has been pushing for CEPT recognition since 1991.

The WIA has been advocating CEPT guest licence arrangements for overseas amateurs visiting Australia, and Australian amateurs visiting CEPT countries, for a similar period. It is an 'active' issue being pursued with the Australian Communications Authority by the WIA-ACA Liaison Team.

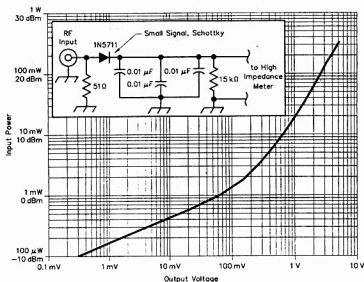


Fig 8 - The diode detector and calibration curve taken at 30 MHz.

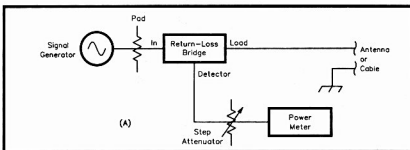


Fig 9 - A return loss bridge test set-up to measure an antenna system or coax loss.

The author's diode detector, together with a calibration curve taken at 30 MHz, is given in Fig 8. A typical return loss bridge test set-up to measure an antenna system or coax loss is shown in Fig 9. The reference reading is taken with the load open or short circuited. The bridge, when the load is perfectly matched, should be balanced and the return loss should be infinite; however, you should be able to achieve a better than 20 dB return loss. 30 dB of return loss is an SWR of 1.07:1.

A table of return loss and SWR is given in Table 1. The reference voltage for an open or short circuit load is given as 1 and the reading obtained in your test set-up is scaled accordingly.

Table 1 - Return Loss and SWR

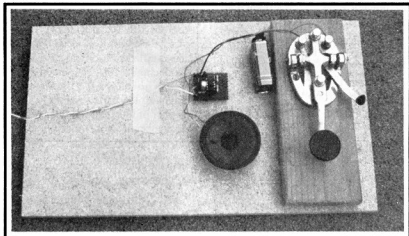
Detector Voltage Ref to O/C or S/C.	Return Loss in dB	SWR
0.00	infin	1.00
0.05	26.4	1.10
0.1	20.0	1.22
0.15	16.5	1.35
0.2	14.0	1.50
0.25	12.0	1.67
0.3	10.5	1.86
0.33	9.5	2.00
0.4	8.0	2.33
0.5	6.0	3.00
0.75	2.5	7.00
0.9	0.9	19.00
0.95	0.4	39.00
1.0	0	infin

ar

■ Novice Notes

A Two-Way Morse Practice Set

Peter Parker VK1PK
7/1 Garran Place, Garran ACT 2605
E-mail: parkerp@pcug.org.au
Novice Notes Online: <http://www.pcug.org.au/~parkerp/nonline.htm>



One of the two-way Morse stations.

Introduction

The first step to learning Morse is to be able to memorise the sounds of all letters and numbers. This can be accomplished with the help of Morse practice tapes or classes. Once you know all the characters, the WIA Morse practice broadcasts and/or continuous VHF Morse beacons can be used to increase your receiving speed.

Additional practice is best obtained by having Morse (CW) contacts on the HF bands. However, many use shyness as an excuse to not use Morse on the air. Others are restricted by their licence grade to VHF/UHF operation or may not possess HF equipment. For such people, this Morse practice set is the next best thing to actual CW operating because it allows you to have two-way Morse 'contacts' with a person in another room or even an adjoining property. The advantage of this sort of practice is that one learns operating skills and procedure as well as sending technique.

How It Works

The system consists of a pair of Morse practice oscillators connected by a piece of two-conductor cable (Fig 1). Pressing the key on one unit produces a sound in both units. The receiving operator can interrupt the sending operator at any time by pressing the key. This is just like the "break-in" CW facility provided in most modern HF transceivers and makes this project particularly suitable for already licensed amateurs wishing to brush up their operating technique for a forthcoming DXpedition or contest. No originality is claimed for the idea, which is described in Reference 1.

Though two stations are shown here, additional sets can easily be wired in parallel. Such multi-station operation has a number of advantages. For example, it could allow a small class to have DX or net-style 'contacts' – thus simulating multi-operator or competitive operation. In such a situation, the class trainer could pretend to be a rare DX

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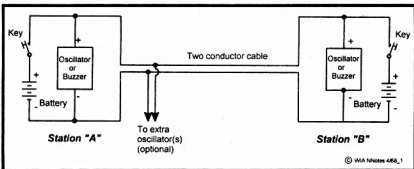


Fig 1 – Two-way Morse practice set.

station calling CQ and students could compete with one another to make the first 'contact'.

The Oscillator/Buzzer

You will notice Figure 1 specifies that either an oscillator or buzzer can be used as the sound making device. A system using buzzers is cheap and simple (buzzers being available off the shelf), but transistor oscillators produce a nicer sound and cope better with faster speeds.

Transistor oscillators are commercially available in kit form (see later) or can be built from scratch. The kit is perhaps best if you have to buy all parts new. However, those with deep junk boxes would save by using available components instead. The remainder of this article provides details of an oscillator that you can build at home. Even if you have to buy the Morse keys new, a two-station set should cost between thirty and forty dollars to duplicate.

Construction

Fig 2 shows the circuit used in the prototype. Two 'stations' are shown, though more can be added if required. The oscillator in each station uses a standard 555 timer chip. As is apparent from the photograph, each oscillator is built on a piece of matrix board about 30-40 mm square. Vero-type strip board could be used instead, but component placement will be more difficult because of the need to solder components to the right tracks. The 0.1 μF capacitors are polyester or disc ceramic, while the 100 μF capacitors can be tantalum or electrolytic. If you are on a tight budget, the speaker, battery snap and (possibly) some resistors and capacitors can be salvaged from a broken transistor radio –

component values are not particularly critical.

A speaker of any size can be used. For economy and compactness, a size of 38 to 76 mm is recommended. You may care to add a headphone socket if you intend to use the oscillator to practice while not disturbing others. A socket with an in-built switch to silence the speaker when the headphones are plugged in is recommended.

Each station needs between 6 and 12 volts to operate. Nine volt batteries were used in the prototype. However, if you intend to use the set a lot, a bank of AA, C or D-sized cells in a battery holder will provide more economical operation. Because all units are 'master stations' with their own batteries, each unit can double as a stand-alone code practice oscillator when solitary practice is required. If this feature is desired, use two-conductor plugs and sockets (3.5

Keys and Kits

While Morse can be sent on an improvised key made from a hacksaw blade or piece of tinplate, it is better to use a proper key. Keys can either be bought new or second hand. The key pictured was picked up for \$5.00 from a weekend trash and treasure sale. A book and a code practice oscillator were thrown in as extras. Dick Smith Electronics sells a Morse key for \$9.95 (cat no D-7105). Also available is a Funway Two code practice oscillator kit (supplied with key) for \$18.50 (cat K-2623). These oscillators work just as well as the 555 oscillator described, and are a good choice for the person who prefers to buy a kit rather than obtaining the parts separately. The number of kits required depends on the number of stations used.

mm mono connectors are ideal) to allow the connecting cable to be easily disconnected.

Testing and Operation

Check all oscillators individually before connecting them together. Pressing the key should produce a tone that is pleasant to listen to and of sufficient loudness. Vary the 10 k and 270 ohm resistors to set pitch and volume respectively.

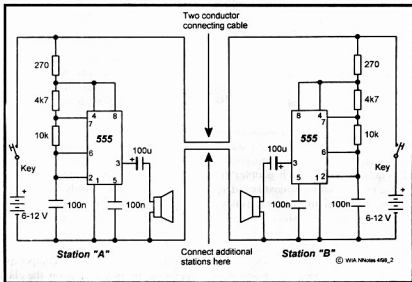


Fig 2 – Schematic diagram of a two-way Morse practice set.

Once satisfied with the performance of each station as a stand-alone unit, wire all units together with two-conductor cable. As it is carrying only DC, the cable need not be shielded. The thin type used for wiring up hi-fi speakers is ideal.

Keying one station should activate all oscillators. If not, check that the polarity of the wires to each station is correct. Use enough wire to separate the stations far enough so that the operators can neither see nor hear one another, so that Morse becomes the sole medium of communication.

The system as presented here is fairly basic. However, various 'bells and whistles' can be added to make operating more comfortable, or more like real live CW operation.

For example, many operators become fatigued when subjected to a tone of uniform pitch for long periods. Replacing the 10 k resistor with a variable resistor (say 20 to 50 k) allows the pitch of each oscillator to be set to the operator's taste.

To make practice sessions more like on-air operating, many things could be done. For example, a resistor in series with a station's key would reduce the loudness of that person's 'signal' in the other people's stations, thus simulating low power (QRP) transmission. If a means could be found to vary supply voltage to each station automatically (say from 4 to 12 volts), over a period of several minutes, signal fading (QSB) would be the result. These effects would of course be made even more realistic by using an audio mixer to introduce real interference (either man-made or natural) from either a continuous loop tape player, digital voice recorder or HF receiver. These embellishments are not necessary for the casual learner, but could be useful to test an operator's ability to pass messages under adverse receiving conditions.

The above ideas have not been tried by the author, but are merely proffered as examples of how a very simple project such as this can become as elaborate as the builder desires.

References

1. Williams N, Rowe J. *Basic Electronics*. Sungrature 1979, p85.

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Morse Practice Transmissions

The following services are provided by individuals, clubs or WIA Divisions to assist people learning Morse.

WIA MORSE PRACTICE TRANSMISSIONS

VK2BW1	Nightly at 2000 local on 3550 kHz
VK2RCW	Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm
VK3COD	Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz
VK3RCW	Continuous on 145.650 MHz, 5 wpm, 10 wpm
VK4WIT	Monday at 0930 UTC on 3535 kHz
VK4WCH	Wednesday at 1000 UTC on 3535 kHz
VK4AV	Thursday at 0930 UTC on 3535 kHz
VK4WIS	Sunday at 0930 UTC on 3535 kHz
VK5AWI	Nightly at 2030 local on 3550 kHz
VK5VF	Continuous on 145.650 MHz, 5 wpm to 12 wpm
VK6RCW	Continuous on 147.375 MHz, 3 wpm to 12 wpm
VK6WIA	Monday to Thursday at 2000 local on 3.555 MHz and Tuesday at 2000 local on 146.700 MHz

In addition to the above transmissions, fairly slow Morse can be heard from aircraft beacons operating in the 150 - 450 kHz range. Because tone-modulated AM transmitters are used, these signals can be received on an AM receiver with no beat frequency oscillator (BFO).

TIME TO DEFEND YOUR BANDS AND HARD-WON PRIVILEGES

420-450 MHz is wanted by Australian commercial interests

RF emission regulations threaten handhelds, mobile rigs, and suburban home stations, with bureaucratic limits

More of 7 MHz is wanted by global broadcasters

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WIA action has: ■ cut the cost of licence fees, ■ cut fees on beacons and repeaters, ■ improved licence conditions, ■ retained access to 50 MHz and 576 MHz; and more.

The WIA maintains representation at World Radio Conferences, and at home, to the ACA and on the Radio Communications Consultative Council. Strength in numbers. Subs help pay.

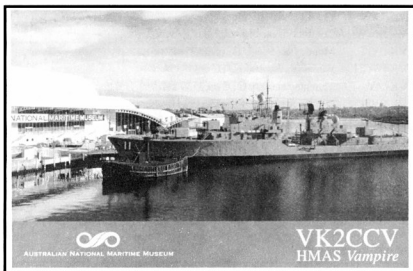


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HOBBY**

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VOICE**

■ Maritime Vampire – VK2CCV

Casey Schreuder VK2CWS
33 Gwydir Street
Engdine NSW 2233



The VK2CCV QSL card.

When the Royal Australian Navy commissioned the three *Daring Class* destroyers HMAS *Voyager*, HMAS *Vendetta* and HMAS *Vampire*, little did it expect one of the three, HMAS *Vampire*, to end up as a museum ship.

Vampire was commissioned from 1959 until 1986, and lent to the Australian National Maritime Museum in Darling Harbour, Sydney in 1991.

On 9 April 1997, the Hon Senator Bronwyn Bishop, Minister for Defence, Industry, Science and Personnel, officially presented HMAS *Vampire* to the Maritime Museum in the presence of Rear Admiral David Campbell, who, at the presentation, gave the ship official permission to fly the "White Ensign"; this is a rare thing as the "White Ensign" is only flown by commissioned ships!

Vampire has always been a friendly and happy ship. Her guns were never fired in anger, and she became a training ship in 1980. Previously she escorted HMAS *Sydney* on two voyages to Vietnam and was involved in patrol

duties during the Malaya-Indonesia confrontation in the sixties.

Members of the Royal Naval Amateur Radio Society, RNARS, became Volunteer Guides on the ship in 1992. In 1994 they started operating VK2CCV, the amateur radio station on board. The

members involved themselves with the restoration of *Vampire* to her former glory and, thanks to the generosity of the Royal Australian Navy, the Comms Centre is now almost fully equipped with B40, B41, B50 and teletype receivers, and associated equipment. Recently, several whip antennas were obtained from the RAN and will be erected soon.

Radio amateurs are invited to visit us, especially on Saturdays when VK2CCV is on air from the Bridge Wireless Office from approximately 10 am local time until about 3 pm.

Alongside *Vampire* is the Russian submarine "Scorpion", a Foxtrot Class submarine, fully equipped with radio transmitters, receivers, sonar and radar, etc (bring your Russian dictionary!).

All contacts with VK2CCV will be confirmed with a beautiful QSL Card with a photograph of the *Vampire*.

Apart from VK2CCV on *Vampire*, RNARS members also operate stations on board *Castlemaine* VK3RAN in Melbourne and *Diamantina* VK4RAN in Brisbane, as well as the club stations VK1RAN in Canberra, VK5RAN in Adelaide and VK6RAN in Perth. Station VK2CC operates from the Cadet Training Centre on Snapper Island.

Amateurs with a professional maritime background are invited to become members of the RNARS, a world-wide organisation with over 3000 members.

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VK QSL BUREAUX

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 CANBERRA ACT 2601
VK2	PO Box 73 TERALBA NSW 2284
VK3	40G Victory Blvd ASHBURTON VIC 3147
VK4	GPO Box 638 BRISBANE QLD 4001
VK5	PO Box 10092 Gouger St ADELAIDE SA 5000
VK6	GPO Box F319 PERTH WA 6001
VK7	GPO Box 371D HOBART TAS 7001
VK8	C/o H G Andersson VK8HA Box 619 HUMPTY DOO NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court. KINGSLEY WA 6026

■ History

A Short History of Electronic Communication

58 Prospect Terrace,
St Lucia QLD 4067

Most of us associate the twentieth century as the century of the telephone, radio, and mass electronic communication. Communication by electrical means, however, has a much longer history than most people believe.

Histories are particular interpretations made from what the writer remembers and garners from whatever sources are available at the time. Frequently those sources are anything but primary and depend, in turn, on other authors, their agendas, and the way they have construed evidence available to them. In the process chain many omissions, commissions, and distortions can creep in.

Technological innovations are especially vulnerable to such errors as, in the heat of creation, the significance of innovation may go unrecognised and unrecorded until much later. Presented below is a potted version culled from my half-century of dabbling in electronics, and delving into a few books from a university library.

One problem for technological historians is determining who did what first. Popular attribution is often a matter of chance, or a manipulation by those who have political or commercial reasons to have it favour a particular name. Another problem is sorting out who was first with an idea. This is sometimes not easy, as it often happens that many people have the same idea at about the same time.

A word used in some literature is "Zeitgeist," which conveys a sense of the time being right for an idea. This is particularly true for technological inventions since there are usually many precursors that must be available before

the imaginative and technical leap can be made. New inventions also depend on the availability of supporting technology, materials, and services. The telephone was not a possibility without wire, insulators, and the idea of acoustic modulation of current flow.

Once the materials and supporting technology become available, the next step may be obvious to many, and the race is on to claim fortune and fame. In the case of the telephone, there was certainly more than one person, other than Bell, trying to develop such a device and, as we see later, who got there first remains debatable. The same goes for radio and television as there are many nominations for inventorhood in the literature for both categories. No doubt there are many names either not recorded, or hidden away in obscure reports, perhaps in languages other than those of mainstream science that deserve some honour. This paper, therefore, is one of supposition. Given that my information is approximately correct, and my scholarship sufficient, the following is what happened, give or take a few simplifications.

Telegraph

The first suggestion that the flow of electricity through wire could be used for purposes of communicating appears to have been made anonymously in a Scottish magazine in 1753. Around the turn of that century, Von Sommering of Munich demonstrated how a signal sent over 600 metres of wire could release bubbles of gas from terminating electrodes at the far end. He proposed the use of a 36-wire system for signalling.

Francis Ronalds started experimenting and constructed what is

probably the first successful telegraphic system in 1816. In 1823 he tried to convince the British Admiralty of the practical possibilities of his system. The Admiralty was then using the Napoleonic system of semaphore towers on hilltops every ten or so miles to carry intelligence between Portsmouth and London. The Admiralty, in its wisdom, advised that their system was sufficient and that an electrical telegraph was wholly unnecessary. Ronalds, somewhat discouraged, gave up the whole idea.

A few years later, Cooke, a retired army officer ex-India, who had been impressed by Ronalds' early demonstrations, managed to persuade the famous Professor Wheatstone to join him to develop a telegraphic system. At that time, railways were rapidly extending over many countries. The need and potential for a telegraph as an adjunct to the rail system was now manifest and Cooke saw this as a chance to win fame and fortune.

He was not the only person to see the commercial possibilities of a workable telegraph system and many inventors were at work on the idea. The 1837 Cooke-Wheatstone system used a version of the Wheatstone galvanometer and five wires. Letters were read by reference to the positions of pairs of needles on a diamond shaped scale and the sending operator had to use two hands to twist two levers into appropriate positions. An application by Cooke and Wheatstone for a patent, now seen as a lucrative prize, was opposed unsuccessfully by Edward Davy, a surgeon, who had demonstrated a successful system in the same year.

Disappointed at losing out on the patent, Davy emigrated to Australia soon after. He did, however, make one significant invention, the "electrical renewer" or relay. This enabled lines to be extended without resort to high transmitting voltages. (The insertion of relays into a line, incidentally, when used with the Morse-code system of signalling, made "reading the mail", by operators along the way listening to the chatter of these relays, a time honoured activity.)

Samuel Morse, a teacher of painting and sculpture at an American university, seemed to be a technical tinkerer and,

among other things, studied the electrical properties of wire of different lengths. On a return boat trip from Europe, after a conversation with another passenger, he conceived of a simple serial code for signalling using only one line. With assistance from Alfred Vail his system was quickly adopted by the American telegraph companies and became a universal method of signalling.

Morse's original code was somewhat different from the system that today bears his name and was intended to be read from ink marks on paper. One can assume that it was because operators were able to read the clicking electromagnet directly and dispense with paper tape, that reading the code by sound became the established way of operating.

Although the Morse-code system flourished, so did the Cooke-Wheatstone system, and developments of it continued also. When fed with pre-punched message tapes, by 1900 the Wheatstone-Creed system was capable of handling up to 600 words per minute, not appreciably less than present-day computer/modem systems.

The Telephone

From early in the 19th century it had been noted that acoustical effects could be produced with the aid of electromagnetism. In 1837 Page produced a "galvanic music" effect and, over the next thirty years or so, many other experimenters investigated the acoustical effects produced by electrical means.

A G Bell is credited with being the inventor of the telephone. His original intent was in developing his "Autograph" or harmonic telegraph, a multiplex system of tuned metal reeds which he hoped would enable up to thirty messages to be passed down one line. In 1875 Bell realised that if he could vary intensity of the sound coming from his singing reeds he might be able to create "electric speech." It took nearly a year of fiddling before something approaching an intelligible human voice could be transmitted and reproduced.

Many accounts exist of the first spoken words to be heard via wire. A common story is that the first words were "Mr Watson, come here, I want (to see) you". This account is given in *The*

People's Almanac by Wallechinsky and Wallace, has been popularised by the Hollywood movie, and is supported, with the addition as bracketed, by Bell's own notebook. Watson recorded it simply as "*Mr Watson I want you.*"

However, according to Bell's own paper presented to the American Academy of Arts and Sciences in May 1876, his assistant was sent into another room to note the effect that might be produced by articulated speech. He suggested that his first utterance was "*Do you understand what I say?*" and that, after a pause, the instrument in his hand articulated the words "*Yes; I understand you perfectly.*" Bell reports that a number of familiar quotations were tried, including "*What hath God wrought...*"

As it always happens, good ideas are rarely unique to one person. Elisha Gray, who was engaged in litigation against Bell over the harmonic telegraph, also had visions of a system that could transmit music and speech over wire. Gray applied for a caveat (literally a legal device that establishes the priority of an idea) on the same day and at the same patent office as Bell's application for what was to be known as the "telephone." There was considerable argument later as to who actually had priority on the concepts involved.

The coincidence of the patent applications seems remarkable also, but the Bell and Gray interests (Western Electric) had been monitoring each other for some time and had been mindful of the problems involved of jumping in first without a fully developed patent specification. From all accounts, at the date of application neither Bell nor Gray had an actual working system. It appears that Bell's first really successful apparatus, achieved only several months after the patent application, actually used the same microphone idea as Gray, a membrane-driven vertical rod dipping in acid water, rather than the electromagnetic transducer described in his 1876 paper. Bell clearly won the race, but perhaps not strictly as a sole genius, or according to the specifications in the patent.

The Bell telephone, unlike many of its predecessor communication devices, did not sit around waiting for acceptance. By

1879 telephone exchanges were already in place in many cities. By 1881 Bell Telephone, and its rivals such as the Edison Telephone Company, had 100,000 subscribers in USA. There were approximately 2,500 telephones in Paris. The UK lagged considerably behind the USA with internecine battles between the various telephone companies and the British Post Office, which held a legislative whip over the whole business to protect their telegraphic trade. Finally, the mess in the UK was solved by nationalisation in 1911 and the telephone took off. By 1913 some 480 million telephone calls were registered as having been made in the British Isles.

While the general population seems to have taken to the telephone, businesses were slower to accept its capabilities fully. Here the lag for public acceptance was considerable longer. Telephones were certainly available in most houses of business, but use was formal and restricted to arranging appointments and confirmations. Important transactions were carried out only in face-to-face situations.

Perhaps the problem was that it took considerable time for the culture to evolve a way of talking without the need for the physical rituals we normally use in making business transactions. Traditionally, one scrutinises the seller's face before making an agreement. Trading without visual contact, and without formalised telephone protocols design to affirm trust, leaves either or both participants vulnerable.

In reflection, Bell's stimulus for the idea of "electric speech," the harmonic telegraph, was in fact a carrier-wave system, and one that was to re-appear in modern guise some 50 years later as a telephone multiplexing system.

Radio Wave Communication

The next step in communication was to do away with the necessity of stringing wires between the two participant stations. During the American Civil War, telegraphic communication had become a vital component of the business of war. Large rivers, however, presented a problem as cabling and insulation was insufficient to allow cross-river connections.

One trick was to run a cable along

each bank for some distance and earth the far end. By using the cross-river conductance an electrical bridge could be established sufficient for communication. It seems possible that the engineers found some direct inductive coupling effects between wires in these experiments.

Preece, a British Post Office engineer, discovered this effect in 1884. Inductive effects were found in wires up to 80 ft from buried cables underneath. Next year experiments were carried out with inductive loops. It was found possible to transmit signals over several hundred metres.

Although the possibility of electromagnetic-wave phenomena at low frequencies had been predicted by Maxwell some years before, confirmation had to wait for Hertz's experiments in 1888.

Another early researcher was Rutherford who, soon after his arrival in Cambridge in 1895 from New Zealand, was able to send and detect signals up to 1 km. Another experimenter was Oliver Lodge who introduced the idea of syntony, or the use of tuned circuits to constrain oscillations and radiation to a single frequency. Garratt (*The Early History of Radio from Faraday to Marconi*, 1994) reports that, in August 1894, Lodge, using a Muirhead telegraphic key and ink, demonstrated the transmission of Morse over a distance of about 60 metres through several brick walls with his Hertzian apparatus. This was possibly the first demonstration of a message, albeit brief, without wires.

Lodge, however, apparently saw the whole matter as a phenomenon of theoretical interest only. It was left to Marconi to claim the title "Father of radio" after he was allowed to demonstrate his experimental apparatus to Preece, the Post Office, and the general public on Salisbury Plain in 1896. Although at first Preece was not impressed, in later trials a good antenna system added to the apparatus enabled Marconi to convince the public that wireless telegraphy was possible.

Whereas Rutherford and other scientists were interested only in the scientific aspects of radio waves, Marconi saw that commercial advantage

could be gained from such phenomena. Since it was clear to Marconi that England was the place to advance his wireless system, it was there that he chose to conduct his later experiments, no doubt with a view to impress rather than advance knowledge particularly.

While Marconi was the first to assemble and operate a practical wireless system, there is some doubt as to his technical understanding of radio-wave phenomenon, in particular the idea of syntony, or radiation on a precise frequency. According to Garratt, Marconi's early apparatus possessed two fundamental faults and probably radiated significantly in two parts of the electromagnetic spectra, those being around 2 to 3 MHz, and around 500 to 800 MHz.

Nonetheless, it was Marconi who had the essential combination of drive for experimentation, commercial acumen, and money, to turn the Hertzian phenomenon into a practical utility for all.

Despite the success of his first demonstrations, the Post Office was able to block at least some of Marconi's experiments in the fear that the wireless form of telegraphy would infringe its monopoly of the electrical communication medium.

One area which the Post Office clearly could not object to as infringing its monopoly was ship-to-ship and ship-to-shore communication. In naval communication the advantage of wireless was clear (almost too clear, as in America the US navy tried to have the entire radio-frequency spectrum reserved for defence purposes only, and the British Admiralty probably would have attempted that also if they thought they could have got away with it). However, several demonstrations of the public usefulness of wireless telegraphy had already created an awareness of the general usefulness of radio waves.

In 1898, a wireless connection had only just been set up between the East Goodwin lightship and the shore at a distance of twelve miles when the lightship was struck by a steamer. Quick communication enabled all lives to be saved.

In 1912, the world was alerted to the "Titanic" tragedy through wireless communication between the stricken

ship and the "Carpathia". The radio operator on the "Carpathia", David Sarnoff, stayed on the job for a straight 72 hours. Sarnoff later moved on to become a founder of a small company which called itself the Radio Corporation of America.

Apart from growing commercial interests in the art of radio, and the demonstration by Fessenden in 1906 by the broadcast of music to show that radio waves could carry more than just a Morse-code signal, there was a growing body of interested amateur experimenters.

It was the existence, and the voice, of this myriad of amateurs that helped dissuade the American Congress from acceding to Navy demands for exclusive use of the radio bands, for amateurs were proliferating so rapidly that it would have been almost impossible to suppress them. The American Radio Relay League also conducted some intensive lobbying, but commercial interests were also powerful in the persuading game. Legislation was soon passed to control who used the radio waves. Amateur experimenters found that they, not too surprisingly, had been dealt cards from the bottom of the pack.

In a paper presented to the Institute of Radio Engineers in 1920, Alexanderson, then chief engineer for RCA, explained that, to span an ocean, a wave length must be used such that the distance did not exceed 500 times the length of the wave. Thus, to reach across the Atlantic, a wave length of 10,000 metres (or 30 kHz) must be used.

At that time, carrier wave signals were generated by mechanical alternators, not unlike a generator found in a power station, only these were run at a very high speed to generate AC outputs of up to 30,000 Hz. To be effective at these wave lengths, antennas of up to several miles in length were required. Having the advice of engineers such as Alexanderson that wave lengths shorter than 100 metres were of no use to anyone, amateurs were relegated to the shorter wavelengths of 200 metres and below. Officialdom, thus, was confident that the pesky amateurs would not be able to get out of their own back yards with a signal. Nor would they be a problem confined to such an unusable part of the spectrum.

Not daunted, amateurs started to develop compact equipment based on the new vacuum-tube amplifiers using the De Forest Audion valve and its successors. In 1921 amateurs in America started trans-Atlantic tests. Was there any possibility that someone on the other side would hear them?

Government and commercial wireless stations had already shown some success in the wavelength range suggested by Alexanderson. Transatlantic communication by wireless, thus, was no big deal. But this was brute-force radio, not the kind a back-yard experimenter could construct.

When amateur transmissions began, reports started to pour in from the other side of the ocean. There was indeed some sort of communication path, but it was irregular. It went in and out with the position of the Sun. Shorter wavelengths were tried and results improved dramatically. Short-wave communication had been discovered!

Soon it was realised that a path depended on ionised particles high above the earth. Transmission over long distances depended on reflection between the earth and the ionosphere, the signal sometimes making multiple hops across the surface of the earth to drop down, conveniently, one hoped, in the vicinity of a receiving station.

Today, far from being restricted to backyards, amateurs achieve inter-continental communication sometimes with hand-held devices. Many of today's amateurs do this comfortably through one of the many amateur-sponsored satellite repeaters sitting in high orbits around the earth.

By the mid-1920s, many radio broadcast stations were in operation. In 1926 the American radio industry had sales of over half a billion dollars. Of course, once the low and medium-frequencies became full, commercial interests turned to wavelengths less than 200 metres and amateurs were again shoved off to nether regions.

Pictures by Wire

Television, like the telephone, had a long gestation. Ideas of transmitting moving pictures date back to the 1890s. The idea of sending a picture composite down a wire was as old as telegraphy.

Around the same time as Cooke and Wheatstone were developing their telegraphic system, others were contemplating the means of sending a direct image off paper. Alexander Bain appears to have been first off the mark with a mechanical scanning device. A patent for this facsimile apparatus was taken out in 1843.

In 1862, Florence born Abbe Caselli, using synchronising pendulums for both scanning and receiving in an apparatus he called a pantelegraphie, was able to transmit a reasonable facsimile over a 400 km path. By the turn of the century reasonable pictures could be received from a telephone line. Facsimile, however, stayed a curiosity. It was not good enough for written copy. The great pictorial age of the press had not yet come and there seemed little use for transmitting still pictures.

Up to this time, efforts had been concentrated on sending a fixed image down a single line. For this, it was obvious that some type of scanning process had to be used. For images that were to be transmitted and viewed in approximately real time it was apparent that a different approach was needed.

In 1908, an Englishman named Bidwell proposed in a letter to *Nature* that an array of 90,000 photoelectric cells would enable a picture of reasonable quality to be transmitted. This system would follow the principle of the eye in that every element would be permanently wired to its corresponding element at the receiving end. His notion was to use a 90,000-wire cable to interconnect stations 100 miles apart. In the penultimate sentence of the letter, with gasping audacity, he suggested the use of the three-colour principle to present the final image in natural colours.

In responding to Bidwell's letter, Campbell-Swinton, an engineer well known to Preece and Marconi, poured some scorn on Bidwell's idea of a 90,000-wire link. However, he went on to suggest that the way to go might be to use the recently invented Braun cathode-ray oscilloscope. He was, in a way, reverting to the scanning idea, but at electronic rather than mechanical speeds.

Campbell-Swinton took out a patent on this electronic system for television in

1908 and was active in early efforts to develop the necessary equipment for electronic television. Unfortunately he died in 1933 several years before his patent became a practical method of television.

The first broadcasts by the BBC in 1936 alternated between what was basically the Campbell-Swinton electronic system and Baird's mechanical system.

The story of Logie Baird, and the subsequent development of Baird's television system, is perhaps too well known to detail here. However, parallelism raises its head again. Before the turn of the century, Nipkow in Berlin had experimented with a spinning, perforated disk. In 1907, Rosing, at the Technological Institute in Petrograd, using the same idea as Campbell-Swinton, built a crude cathode-ray-tube receiver. One of Rosing's students was a Vladimir Zworykin. Later, Zworykin developed the crude cathode-ray tube into the two major devices needed for modern television, the kinescope picture tube, and the iconoscope camera tube. This was after he had migrated to America (and RCA).

Although the BBC has been often credited as offering the world's first television service in 1936, a network of five cities had been in operation several months earlier in time for the Berlin Olympics.

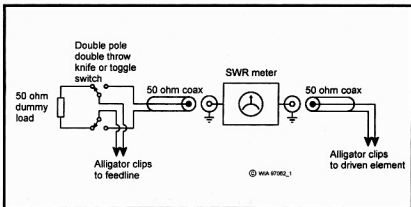
Television was put in abeyance in Europe by World War II until peace had been established. The BBC resumed a 405-line electronic service which was maintained for the next twenty years. Meanwhile America, after many internecine battles between rival systems, had settled on a 525-line NTSC standard and France had chosen an 819-line standard.

Currently, many countries have adopted a 625-line standard, but the matter is anything but settled. High-definition TV is in the wind, but standards for such, apparently, remain to be determined. To obtain sufficient bandwidth for the greatly expanded picture, current technology will have to be pushed to new limits, as ever it was with the introduction of each new standard. It remains to be seen which of the many systems will win out. **ar**

Antennas

Device to Adjust a Driven Element

Graeme L Wilson VK6BSL
26 Dollis Way
Kingsley WA 6026



The device to check a driven element.

Here's a device to enable one person to adjust a driven element for lowest SWR, be it a beam, quad, vertical or dipole.

On a flat board about 200 by 100 mm, mount an SWR meter either by a strap over the top or brackets. To the side of it mount either a two pole two position knife switch or, on a small front panel, a similar toggle switch.

Solder a 100 mm length of 50 ohm coax to a PL259 plug. To the other end solder two alligator clips. This is the connection to the Driven element and is plugged in to the "antenna" terminal on the SWR meter.

From the "transmitter" terminal on the meter fit a PL259 plug and short length

of cable. Connect the free end of the coax to one end of the knife or toggle switch.

To the other end of the switch make up and fit a five to 10 watt 50 ohm dummy load using suitable resistors. Solder two wires to the switch centre terminals and fit alligator clips to the ends. These are the connections to the feeder from the shack.

Set your rig to the frequency required and adjust the drive to about five watts to activate the SWR meter. Then hop up on the roof or stepladder and adjust the length of the driven element while isolating yourself with the switch to prevent RF burns.

I sat my device on the roof tiles to make the adjustments but, if your driven element is up higher, you could fit a couple of hooks to the board and hang it off the driven element.

Now, all I have to do is figure out how to adjust the reflector up in the air by myself for best front-to-back ratio. Anybody worked that one out yet? (I have actually adjusted it but had to call on the XYL's help to read the S meter and relay the results to me up on the roof by a cheap intercom and length of twin wire.)

ar

Amateur Radio Technical Editor's Note

Many SWR meters give optimistic readings on low power, due to the non linearity of the diode rectifiers used. A final check at full power, perhaps in the shack, will confirm that all is optimised.

To make life easier for the transceiver or transmitter when using this technique, it is also recommended that an attenuator of at least 3 dB be inserted in the feedline at the transmitter end when testing to limit the SWR "seen" by the transmitter to 3:1 or better. The attenuator could consist of a long length of small diameter coax cable, eg RG-174.

Also, don't forget to listen on the frequency and identify when testing!

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AR-8000 HAND HELD SCAN... \$950
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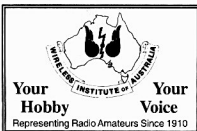
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■ Antennas

Quads and Their Spreaders

Don Jackson VK3DBB
55 Ryan Road
Pakenham VIC 3810

One of the complaints I have heard about quad antennas is related to the spreaders, and the difficulty and cost of obtaining the right material for them. I had the same problem too.

Several years ago I was presented with a pair of "Bandit" aluminium quad hubs, but no spreaders. I looked at the usual fibreglass fishing rod blanks, bamboo poles, etc, and decided they were too costly, or needed extensive protective coatings. Wooden ones were too fragile, and were subject to rot; or were they? After visiting our local hardware shop, I found 5/8 inch dowels (16 mm) and, although they looked promising, I was still concerned about their longevity.

A chance discussion with a friend gave me the answer. I bought eight

dowels of sufficient length to make spreaders for the 10 and 15 metre bands, took them to a local timber impregnation plant, and had them pressure treated by the same method as pine.

The rods were cut to length and fixed to the hubs with stainless steel worm drive clips. Anchor points for the radiating wires were determined, eye hooks were put in place to receive them, then the elements were fitted and secured with black cable ties.

However, when I lifted the assembly up, the rods flopped about like limp celery. Strength was obviously a problem. I tied together the ends of each pair of spreaders with lengths of cord that I was assured was weatherproof, and everything was fine - for about 6 months!

Whilst the cord was weatherproof, it

was highly susceptible to UV rays, so the cords broke and left the spreaders flopping around again. But the spreaders did not break! They were flexible enough to withstand normal wind loads.

Down the quad came again, and this time I used weatherproof and UV-proof line to tie the spreader ends together. This proved to be successful. That is, until one day after a violent windstorm a few years later, I found two spreaders broken. This time, however, it was my fault.

Over the years, a nearby liquid amber tree had grown and spread so much that one of its branches had encroached into the wingspan of the quad. During the storm the branch had thrashed around so much that it had broken two adjacent spreaders.

But the final part of the story is that, after 12 years, the spreaders that were not broken were still providing good service. It was dismantled in 1995 when I moved house, and the system has not yet been re-erected, but the spreaders are still OK for further use.

So why not try treated dowels for spreaders? But when you do, select carefully the ones you want so as to ensure they are straight grained, as this is the secret of their strength.

ar

■ History

Big Brother is Watching You - Thank Goodness!

Sam Wright VK6YN
19 John Street
Gooseberry Hill WA 6076

The rescue, deep in the Antarctic seas, of yachtsman Tony Bullimore, graphically illustrated the present day sophistication of warning and distress beacons, and the related Search and Rescue Procedures ability to function over great distances, all by the use of satellites.

It also recalled to me an incident, over fifty years ago, when ships and airmen in distress situations were also monitored, when recourse had to be made to the calls Pan, Mayday, and SOS, with more care and efficiency than they realised.

In mid-1945, I was flying as a Navigator/Wireless Operator in Anson

aircraft on the daily return diplomatic mail service between Croydon, London and Le Bourget, Paris (there never was a satisfactory technical explanation for the remarkably high incidence of "mag drops" at Le Bourget, necessitating an overnight stay, but not unconnected were the extremely artistic displays which were on show at the fabulous "Moulin Rouge"!).

The radio equipment in use was the MF/HF Marconi TR-1154/1155, which was situated behind my seat, with a rather horrible Bakelite Morse key on a ledge by my right hand.

On the trip in question, a spare pilot, who wore (note well!) a uniform of deeper blue than that of the RAF, was perched on the top of the bags of mail, leaning over my shoulder, and seemed, for a pilot, more than usually interested in my navigation and radio activities.

Nothing untoward occurred on the flight, but there was a summons to report to the office of the Adjutant shortly after landing. My pilot and I were closely questioned as to whether, in mid-English Channel and in the vicinity of our "track", we had seen or heard any sign of an aircraft or vessel in distress, as the monitoring service had picked up an SOS call at the time and area of our flight.

We had not, and were puzzled and concerned that perhaps we should have been more diligent and observant. However, we were fortified by the obvious dedication of the operators of the monitoring equipment, probably housed in a darkened room, and hunched, with poised and delicate fingers, over their "goniometers", with an aura of Guardian Angels to us wild and reckless airmen.

So what had really happened?

The English Channel holds the

secrets, and the debris, of conflict way back beyond the Spanish Armada. The more recent addition of ships and aircraft reflects, no doubt, so many desperate SOS calls for assistance, with fate holding away over the outcome. That superb band leader, Glen Miller, for instance, was lost without trace in mid-channel in December 1944, but his voice is still with us of that generation, and who can forget the magic of "In The Mood"?

So what of our experience of a "positive" monitoring, which had no easy or apparent explanation? Was it a ghostly echo from a desperate crew of an earlier day, when disaster was upon them?

Like a persistent toothache, the matter niggled on and, although we were adjudged to be "in the clear" by the powers that be, it was only much later, during a moment of insight, or even from a kind of suppressed guilt, that a rather mundane explanation offered itself.

The 1154 had a "tune" position providing low power radiation and, at some time on the flight, I must have left the switch in this position, possibly when taking a "drift".

Pilots are prone to fiddle, like the rest of us, and our "spare bod" in the back, bored or vaguely dreaming of becoming a radio ham after demobilisation, undoubtedly could not resist getting his hand on my Morse key. I can only conclude that his knowledge of the Morse code was limited to two letters, being those of three dots and of three dashes, sent, perhaps with a heavy and inexperienced hand but strong enough to tickle the sensitive goniometers of those Guardian Angels doing what conscientious Guardian Angels do in their lairs hidden away from our mortal eyes.

It really was a most comforting incident.

ar

■ History

The Father of Youth Radio

Rex Black VK2YA (1912-1997)

Sid Ward VK2SW
33 White Avenue
Wagga Wagga NSW 2650

It is with mixed emotions that I put together the following abridged record of a lifetime of association in communications with Rex Black. I am very sad to be writing of his passing, but it is a pleasure to recall some of this man's wonderful achievements.

Whilst I didn't know Rex personally until he moved to Wagga in the late 70s, I, like most amateurs that had been around since the very early post-war years, did know of his activities in youth training within the amateur radio movement. His particular field was providing training and encouragement to

young people who were leaning towards amateur radio as a chosen hobby.

Rex was a natural 'educator', that being his profession as a very respected high school teacher. He was the main instigator of the famed **Youth Radio Scheme**, which was endorsed and approved by the WIA back in the days when training facilities for young people (often still at school) were difficult to obtain at a local level.

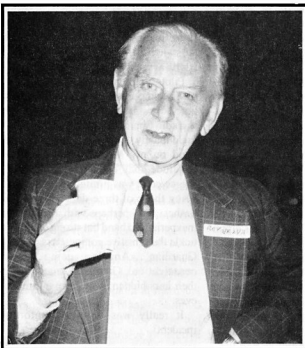
It seemed that Rex was always there when youth training was involved. His efforts, in conjunction with other dedicated amateurs, resulted in many

new amateurs joining, and remaining, as active amateurs of the future. Young people of the day owed such a lot to Rex.

His work with young, prospective amateurs followed a colourful career in the armed services (mainly the RAAF). To provide details of his military service (again in communications teaching) would require much more space than is available for this article. Suffice to say, that as would be expected from a man of Rex's character, he sought precision in everything in which he was involved. This included radio theory and, of course, his 'pet love' Morse code.

I will stick to his history as far as amateur radio is concerned. From information supplied to me by Jo Harris, the VK2 Division Historian, it is amazing just how much unselfish effort was poured into our hobby by Rex from 1953 onwards, right up to within a very short time of his death in November 1997.

In my opinion, he would be the most patient, conscientious teacher of ANYTHING that I have ever encountered. He was a perfect gentleman at all times and he would bend over backwards to help anyone who had



Silent Key Rex Black VK2YA

the slightest leaning towards amateur radio.

Rex came to Wagga in 1979 and went straight into encouraging would-be amateurs to study and obtain their licences. His proficiency in CW was very well acknowledged, and for many years he was a leader in the famous nightly VK2 slow Morse training on 3550 kHz. Many members of the amateur radio community used this Morse training to lift their Morse proficiency.

I had the privilege of being one of his Morse-practice operators during his years in Wagga. He had great support from professional and dedicated CW operators over the years, and many current amateurs can thank Rex and his band of helpers for the training they received at his hands.

Amateur radio was not Rex's only community-based activity. During his years in Wagga, he was involved in many educational and social clubs, and was also a regular contributor of extremely well thought out newspaper articles on a whole range of public interest subjects.

He was a very learned man who liked to share his knowledge and experience with others; he was a great family man, was extremely co-operative, and at all times a perfect gentleman.

His passing is a great loss to the community in general and to the amateur radio movement in particular. His family are very proud of him.

Thanks for everything, Rex.

ar

■ Test Equipment

Build a Cheap RF Capacitance Bridge

Ron Sanders VK2WB
14 Boanyo Avenue
Kiama NSW 2533

Introduction

There have been several articles in *Amateur Radio* over the past year or so which provide details of filters for HF use, and construction of suitable inductance measuring equipment (see the references at the end of this article).

If you need to build such filters, it is useful to be able to measure fixed (or variable) capacitors to a reasonably close tolerance (5% or better). Close tolerance capacitors are not only difficult to find, but are also more expensive, so it is better to make up the value from a few common 20% tolerance capacitors by combining them in parallel. Most of these filters use

capacitance values between 10 and 4000 pF.

A comparison bridge is a very simple instrument, with the ability to measure to accuracies of at least 5% if it is carefully constructed. Since I had a good quality, small variable capacitor of about 150 pF, I decided to build a capacitance bridge. The capacitor used must have a linear relationship between capacitance and shaft rotation; ie it must have semi-circular rotor plates and symmetrical fixed plates. If a linear type is not used the calibration curve will not be a straight line.

For bridge excitation and detection, I initially used the "sweeper" which was designed by Tibor Becce and featured in *Electronics Australia* over several months. This is an excellent system for many HF applications and is a very useful tool for the shack if you have a computer.

For those who don't have the "sweeper" equipment I decided to try a simpler system for the bridge excitation and the detector. This system uses fixed oscillator frequencies for excitation with a receiver as the detector for the bridge.

Bridge Circuit

Refer to Fig 1. The variable capacitor is the heart of the bridge, and should be of good quality and construction so that the settings give repeatable results. If you want to measure small values of capacitance (eg 10 pF), the minimum value of the stray circuit capacitance should also be small.

I chose to make the lowest range about 1/3 of the capacitor variation, by scaling the resistors R6 to R1 in a ratio of 3:1. The ratio of the "capacitor under test" to

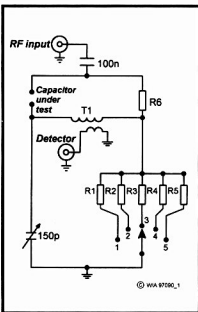


Fig 1 – The bridge unit.
T1 – primary 12 turns, secondary 4 turns on FT-37-43 core.

Resistors:

R1 10 R
R2, R6 33 R
R3 100 R
R4 330 R
R5 1 k

Ranges:

1 0 – 60 pF
2 0 – 180 pF
3 0 – 500 pF
4 0 – 1.8 nF
5 0 – 5.0 nF

the variable capacitor must then equal the R6 to R1 ratio for the bridge to balance.

At balance, the voltages at each end of the T1 primary are equal, and so produce no current through the winding. This is the "null" (theoretically zero) output when the bridge is adjusted for balance.

I decided to keep the bridge impedances reasonably low (a few hundred ohms) and have five measurement ranges covering 0 – 5000 pF. Since the bridge requires a balanced detector output, a balun is used to couple to the unbalanced coaxial input of the detector. A good property of the bridge circuit is that it is only necessary to detect a "null" output when the bridge is balanced, which means that a high gain, uncalibrated detector can be used.

Various circuit values were tried for the range resistors, with the aim of having range two cover the approximate range of the variable capacitor, ie 0-150 pF. This meant that the values of R2 and R6 should be the same. The ranges then approximate the scale of 0.3, 1, 3, 10, 30, which is commonly used by instrument manufacturers, as it provides good overlap.

To meet the requirement for a low bridge impedance and sharp "null", it was found necessary to use three frequencies for excitation. For the two lower ranges, 10 MHz gave good results, while 4 MHz was used for the next two ranges, and 1 MHz for the highest range.

Calibration

Refer to the Calibration Plots. The bridge was calibrated using a few good quality capacitors which were measured to within about 1% by a friend with access to a laboratory bridge. A few selected values of 1% silvered mica capacitors from RS Components will provide calibration points if you cannot get access to a laboratory instrument.

Once the values are known they can be combined as necessary and plotted to provide a calibration curve. The plotted points for the five ranges of my bridge are shown below, and closely conform to a straight line.

Excitation Oscillator

Refer to Fig 2. There are plenty of cheap oscillator modules available (ex PC boards) which cover from 1 – 50 MHz and provide a square wave output

of approx 5 V p-p. Note that the output of these modules has a DC bias and must have a blocking capacitor in circuit.

As long as you calibrate the bridge at your chosen frequencies, the results should be just as good. The higher the frequency the more you will get "stray" effects in your readings, resulting in non linearity. The highest frequency will depend upon the smallest value capacitor you want to measure; in my case 10 MHz was suitable. I have used a wide-band step-down transformer on the output to reduce the output voltage and provide a low impedance source for the bridge excitation.

My unit switches the 5 V supply to each module to prevent any pickup of the unused module by the detector (receiver), but this may not be necessary. I have also put blocking capacitors in each module output to prevent any possibility of shorting during range switching.

I have not shown the pin connections for the oscillator modules as they can be in either eight or 14 pin DIL packages.

Detector

Refer to Fig 3. If you have a receiver with an S meter which covers the oscillator frequencies used in your bridge, it can be used as the null indication. Alternatively, your ears will act as a very sensitive null detector if the receiver is providing an audible beat note. This arrangement will require an attenuator, with steps allowing at least 0 – 80 dB change, in the input to the

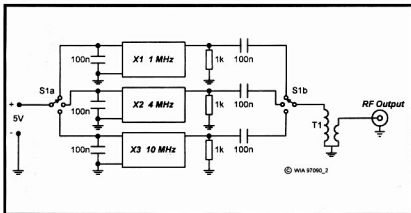


Fig 2 – The bridge excitation unit.
T1 – primary 12 turns, secondary 4 turns on FT-37-43 core.
All capacitors 100 nF.

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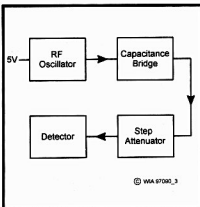


Fig 3 – Block diagram.

receiver to provide sufficient adjustment to pick the “null” when the bridge is balanced. Such an attenuator is listed in the *ARRL Handbook* and other amateur publications, and uses readily obtainable parts. The test arrangement as outlined above is almost as good as using the “sweeper” equipment.

Construction

The capacitor under test is connected between two binding posts, which are the only components outside the bridge enclosure. Use good quality binding posts which should provide metal to metal surfaces at the clamping points rather than plastic.

I used a vernier dial on the variable capacitor to give more repeatable readings. My oscillator and bridge are in separate shielded boxes to reduce direct

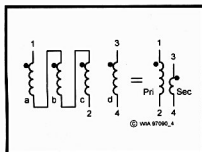
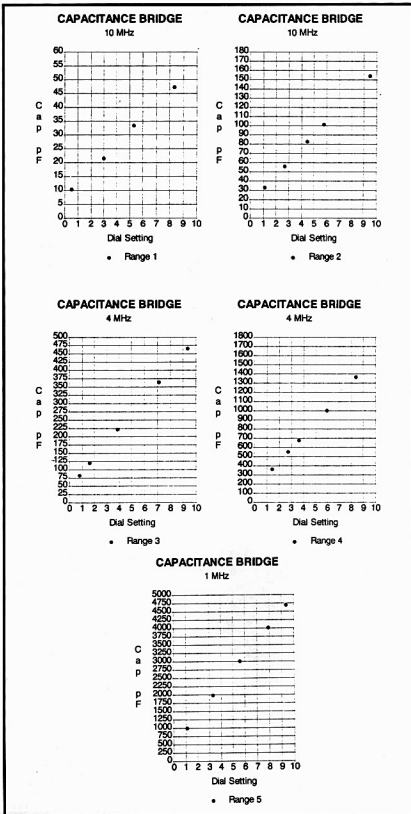


Fig 4 – T1 construction. Wind four turns around an FT-37-43 core using a bundle of four equal length wires. Identify the starts (•) and finishes of each winding of four turns (a, b, c, d) and connect as shown on the left. This produces a primary of 12 turns and a secondary of four turns.



Calibration Plots.

coupling between the excitation and detector, and all interconnecting leads are RG58 coax.

Use solid mechanical construction when mounting the variable capacitor, and try to keep the bridge layout reasonably symmetrical with short point to point wiring to reduce stray capacitance. The oscillator unit lends itself to construction on a piece of single-sided copper-strip matrix board with 0.1" pitch holes. The transformer (T1) should be wound using the quadrifilar method to reduce unwanted capacitive coupling between the windings. For those unfamiliar with this method refer to Fig 4.

Some Final Thoughts

To reduce the system to the bare minimum, I tried using a "dipper" (GDO) for the bridge excitation by coupling via a small 1-2 turn loop at the RF Input connector, and using the receiver as the detector. The results were surprisingly good and, provided the excitation set-up remained in a stable physical relationship, the stability was adequate for the receiver to detect the null.

I haven't tried it, but it might be possible to replace the output transformer in the oscillator unit with a non-inductive potentiometer, which

would allow sufficient adjustment of the output to dispense with the step attenuator.

The 5 V supply to the excitation oscillators could be derived from a built-in regulator inside the enclosure.

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1. *Technical Abstracts*, June 97 AR
2. *RF Inductance Meter*, June 97 AR
3. *Little -L Inductance Bridge*, Nov 92 AR
4. *Constant-K Filters*, Aug 97 AR

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Tuneable Oscillators The Super VXO Heads South

Peter Parker VK1PK
7/1 Garraan Place
Garraan ACT, 2605
e-mail: parkerp@pcug.org.au

Introduction

Maximum pulling range with acceptable stability. That's the aim of every experimenter who dabbles with variable crystal oscillators (VXOs for short). Each VXO is a unique case, and it can be hard to duplicate other people's results.

What follows is an account of experiments performed with a little-known technique that can dramatically increase the pulling range of VXOs. Claimed to have been first used by Mr Shimizu JA0AS (now Silent Key) and Mr Okubo JH1FCZ, the experimental results of the first "Super VXO" were published in the August 1980 issue of the *Fancy Crazy Zippy*, a homebrew and QRP magazine published by JH1FCZ. Until very recently, the idea appears not to have been widely used by experimenters outside Japan.

The writer was first alerted to the possibilities of the so-called "Super VXO" by a message on the Internet

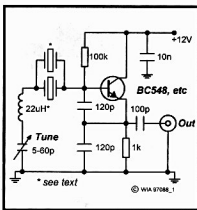


Fig 1 - Schematic of the twin crystal VXO.

rec.radio.amateur.amateur.homebrew newsgroup. I was initially sceptical, as many published VXO circuits have claimed extended pulling range. The message gave 7N3WVM's Internet Home Page as a reference.

Circuit Description

Reference to this page revealed a Colpitts VXO circuit that looked like any other. What was different, however, was that the "Super VXO" uses not one but two crystals on the desired frequency. The second crystal was simply wired in parallel with the first. Adding the extra crystal was claimed to dramatically increase the frequency shift available. 7N3WVM reported a 40 kHz pulling range on 10 MHz and 90 kHz on 13 MHz with his twin crystal VXO circuit.

Experiments Performed

To test whether these results could be duplicated, the author constructed an experimental VXO circuit similar to that used by 7N3WVM (Fig 1). A transistor labelled 5643 was used in the prototype, but a BC548 should work just as well. A 22 μ H RF choke was used as the series inductor. Sometimes two were wired in series to increase the VXO's pulling range. Leads were kept short to ensure reliable operation.

Once the oscillator was completed, its output was fed to a digital frequency counter. Tests were done with a selection of crystals of varying sizes. The object of the exercise was merely to prove that adding the extra crystal did increase the VXO's swing. For this reason, no attempt was made to optimise component values and increase shift further. Neither were detailed measurements of the VXO's frequency stability performed.

Table 1 - Test Results

Crystal frequency (kHz)	VXO inductance (μH)	Number of crystals used	Minimum frequency (kHz)	Maximum frequency (kHz)	Shift (kHz)	% change
3579	22	1	3579.26	3580.52	1.3	-
3579	22	2	3579.28	3581.33	2.0	54
4433	22	1	4430.78	4435.24	2.6	-
4433	22	2	4431.13	4436.93	5.8	120
4433	22	3	4431.93	4437.90	6.0	130
5366	22	1	5364.27	5368.83	4.6	-
5366	22	2	5364.28	5369.86	6.6	44
5366	44	1	5362.63	5368.13	5.5	-
5366	44	2	5360.07	5369.65	9.6	74
7159	22	1	7156.52	7162.65	6.1	-
7159	22	2	7154.55	7165.11	10.5	72
7159	44	1	7151.75	7160.80	9.1	-
7159	44	2	7135.93	7162.95	27	197

Results

Table 1 shows the results of the experiment. The most significant finding is that, in all cases, adding an extra crystal increased the VXO pulling range. The increase achieved varied between about 40 and 200 percent. The benefits of adding the extra crystal appeared greater

when larger series inductances were being used.

An interesting experiment was the use of three parallel crystals during one test. The result achieved did not justify the addition of the third crystal. As well, the three-crystal oscillator was sluggish in

starting when the variable capacitor was near maximum capacity.

Builders of VXOs tend to favour HC6/U size crystals rather than miniature types (HC18/U, HC25/U) for greatest frequency swing. The 4.433 and 5.366 MHz crystals were in HC6/U holders, while the others were in HC18/U cases. The results with the 7.159 MHz crystal were particularly interesting. Despite its smaller holder, a wide frequency swing was obtained, especially when the larger inductor was being used.

Conclusion

Adding an extra crystal has been shown to substantially increase the pulling range of VXO circuits. Builders of VXO-controlled equipment should always order two crystals instead of one – the extended shift obtainable will probably be worth the extra expense.

Reference

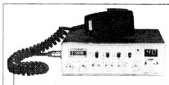
<http://www.qsl.net/7n3wnm/>

ar

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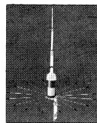
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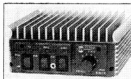
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Almost a YL

During the school holidays Dot VK2DDB let her son Peter, who has his learner's permit, take her for a long drive which ended up at Cottage Point close to the village where Jean Darling lives. Dot decided to pop in and was in luck as Jean was at home watching the tennis. She was delighted to meet them and chat about radio.

Jean was "in signals" during the war and could do Morse easily. Assuming it would be easy to get her amateur radio licence, she attended the WIA classes at St Leonards. She was rather surprised that the theory was so hard and decided to remain interested in radio but do other things.

Jean is a very active lady who loves walking. To practise for a hike in the Himalayas a few years ago, she used to go bush walking in the Blue Mountains every weekend. She was planning a long walk in the South Island of New Zealand at the time of the visit. Jean has a collection of rocks from her many walks and even had to pay excess baggage for her souvenirs after one trip.

Jean now lives in a unit surrounded by beautiful gardens. Linking each block of units are boardwalks beside tree ferns and over smaller ferns in the dry creek beds with gum trees over all and the air filled with bird calls. Dot had the impression that aerials, beams and towers would not be welcomed.

Travellers

Agnes PA3ADR and OM Hank dropped in on Dot VK2DDB earlier this year. They were returning from a trip to the beach at Mona Vale to Quaker's Hill, where they were staying with their son and his wife, via Galston Gorge which made it easy to visit Dot.

Agnes also has a VK callsign VK2GWI and tried to join the YL 222. Unfortunately, she could not be heard. Agnes and Hank returned to the Netherlands the day after they visited Dot, and Agnes was hoping to join the 222 net from home. Has anyone heard her?

On the Web

(Richard VK2SKY
richardm@zeta.au)

Linda KF4GKN contacted Richard to let him know that his page at <http://www.zeta.org.au/~richardm/RadioClubs/other/fal ara.html> had been linked to the Stones River ARC YL Page at <http://www.voy.net/~rfj/yl.html> which is one of the largest YL link pages on the entire WWW. Linda hopes you will come visit, and is keen to discover any other YL links which are not included on this page. Just drop her an e-mail with your URL.

ALARA

Sally Grattidge VK4SHE

ALARA Publicity Officer
C/o PO Woodstock, QLD 4816
Tel: 077 788 642
Packet: VK4SHE@VK4RAT.#NQ.QLD.AUS.OC
Internet e-mail: rgrattid@ozemail.com.au

The YLRL Home Page address has been changed to <http://home.earthlink.net/~tenntry/ylrl/>

Nearer home, Dot VK2DDB is setting up a Web page for ALARA for Tony VK2TJF to add to the HADARC page, <http://marconi.mpcce.mq.edu.au/hadarc/> It should be up and running by now - have a look (the page features a photo of Dot). She had to learn how to use Netscape, and the shack now boasts two computers side by side opposite the doors. "It all looks very technical for just a housewife," says Dot. Some of these 'housewives' lead very interesting lives!

South Meets North

(from Alison G0ALI via BYLAR
Newsletter December 1998)

Alison sponsored Celia ZL1ALK several years ago and, although they exchanged many letters, they had never met or even spoken - until 1997. Celia's youngest son, who had been studying in England, announced that he was getting married in Oxford, so of course Celia and OM Geoff wanted to be at the wedding. Plans were made to include meeting Alison, who happened to live not far from where Celia's father was born.

The long awaited meeting was delayed for more than an hour by a coach driver who got lost in Birmingham, but at last they got together. They even recognised each other from the photographs exchanged over the years (warning - don't send your sponsor a 20 year old photo - you never know when you might meet her!) The meeting was a great success and now Alison is saving for a trip to New Zealand.

If you have been thinking about sponsoring a YL in another country, but hesitate because you are unable to contact them by radio, be inspired by this story and go ahead.

1999 YLRL Convention

This will be held on 30/31 July 1999 on the Queen Mary in Long Beach, Southern California. More details later. If you have not seen the January Newsletter, the contact is Martha Barron KA6TYO.

Wyong Field Day

(Dot VK2DDB)

The day dawned hot, but not as hot as some previous years and a gentle breeze moved the air occasionally. Nancy Karas, busy knitting an Aran jumper to put in the Sydney Royal Easter Show (to be held for the first time in the new show grounds at Homebush), sat with Dot and chatted with the visitors at the ALARA table. About 40 people signed the visitors book, although many more came to look.

Anne VK4ANN was one welcome visitor who took the chance to sit at the table in the air-conditioned room away from the crowded stalls. She managed to catch up with a few friends and acquaintances who passed the table on their way round the room. Dot's two sons entered the foxhunts and won prizes. They also managed to be walking past stalls of pre-loved stuff just as the people were deciding they didn't want to take it home again, and collected a selection of 'good junk'.

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Update

"Club News" - Northern Corridor Radio Group CQ World Wide CW Contest

(published on page 51 of Amateur Radio,
March 1998)

Neil Penfold VK6NE, the author of the news item, has pointed out that the callsign of the club station of the Northern Corridor Radio Group, which appeared in the second line of the third paragraph as VK6AN, should be VK6ANC.

It might be a good idea to correct your copy of the March 1998 issue of Amateur Radio now.

ar

Further to my earlier notes about Morse code exams, one correspondent has suggested that the format of the examination be altered to allow a few seconds at the end for the candidate to fill gaps or correct any misshapen letters. Another has suggested that the candidate should be allowed to copy out the completed text to make it easier for the examiner to read.

The standards for the CW examinations vary considerably from country to country. In some, time is allowed at the end to read over. In others, the text written down is not checked, but the candidate is asked questions on the content received. Others, as in Australia, insist on "pens down" as soon as the closing signal is sent. They also vary in the character speed, overall text speed, length of both sending and receiving texts, and the number of errors allowed.

Similar variations occur with the sending. In some countries no sending test at all is required.

The WIA has long endorsed the present system. The examination is a test of ability to recognise the Morse characters and write them down. It is not a test of the candidate's ability to journalise, or to spell, or to guess the letter which should have filled the gap. If you

Education Notes

Brenda M Edmonds VK3KT
 Federal Education Co-ordinator
 PO Box 445
 Blackburn VIC 3130

can fill a gap while taking down the rest of the text, fine. That confirms that you know the other letters well enough to have time to spare.

It is important, though, to write the characters clearly. The best method is to use block capitals. Practise this from the time you start to receive, emphasising the differences between similar letters such as D/O, U/V and X/K, etc. I have, somewhere, an old training document which shows how to form the

letters quickly and cleanly by providing arrows to show the directions of the strokes.

The practice text included at the start of the examination text is to help the candidate become familiar with the tone, speed and proportions of the examination. Use it also to gain practise clear printing. If you must change a letter, make it clear. A botched correction is likely to be counted as an error.

On another topic, the *Examinations Committee* has recently submitted new Regulations examination papers for approval by the ACA. Some of these papers may well be ready for use by *WIA Exam Service* within a few weeks. Examiners who have become familiar with the papers used over the years may well feel that the new papers are harder than the old because there will be questions on them which they have not seen before. The Committee is very mindful of this effect, and is taking care that the standard is maintained.

Finally, a request: would members who write to me with queries please include a contact telephone number. I am a very lazy letter writer, and would much rather discuss a problem by telephone. If you have written and not received a reply, please write again and remind me.

ar

AWARDS

John Kelleher VK3DP
 - Federal Awards Manager
 4 Brook Crescent, Box Hill South, VIC 3128
 Phone (03) 9889 8393

Thankfully, things are beginning to happen on the bands. Only a few, but they are among the wanted by most of the DXing population. I know, because I hear more people asking for QSL information, and who is the manager for so-and-so.

During my appointed rounds, I bumped into a QSL manager, who possesses a deep understanding of the QSLing process and always tries to do his best to see that each card reaches its destination. He was most passionate about those who send out cards without proper directions. He outlined a few rules which may help you to receive those precious pieces of cardboard which help towards DXCC, and other awards, worldwide.

Firstly, ascertain that the country you are addressing the card to has an active QSL bureau. If the answer is in the negative, find out who is the QSL manager for that operation, or the call book address of the particular operator. Also, remember that QSL bureaux do not possess any of the information mentioned above.

The QSL card size should not exceed 140 x 90 mm, or be less than 125 x 80 mm. QSLs should not be printed on lightweight paper.

The call sign of the recipient station must be clearly printed on the top right hand corner

of the card - front or rear. If the card is to go via a manager, this must also be marked clearly on the card.

The addresses of IARU registered QSL bureaux are printed on pages 12A and 13A of the *ARRL International Call Book*.

The BAFARA Award

This award is instituted by the Belgian Air Force Amateur Radio Association, and is available to all amateurs and short wave listeners.

Points to be obtained: ON stations 10 points; EU stations five points; DX stations three points; contacts heard with BAFARA stations, one point; contacts heard with BAFARA Club stations, two points. Each

station may be contacted/heard once only. No band or mode restrictions. Contacts made via relay stations or by automatic stations are NOT permitted. Only contacts made/heard after 1 January 1992 are valid.

Valid BAFARA Stations: ON1AEW, ANY, AKK, AOG, APF, ATZ, AZH, BCS, BDD, BOZ, BPJ, BPP, BPS, BSX, BUX, BXD, BXO, BZK, BZO, BZU, CGD, CIP, DG, HU, HQ, IR, IT, KFE, KGC, KJU, KLZ, KPM, KYC, RE, TY, XC; ON2ADX, AHJ, KDF; ON4AGV, ALL, ANM, AWK, AXV, AYP, BAJ, BZ, DD, HG, KR, KZF, MS, MW, NG, OK, PD, TE, TJ, ZL; ON5AP, DT, GX, HL, HO, JF, JR, ME; ON6AS, CT, EB, JE, KL, NU, TA, TJ, VP, XI, XP, UG, WR; ON7AV, BQ, EB, EC, EH, HO, HQ, HS, IL, NW, OG, QI, QJ, SR, SU, SV, WG, YP; ON8MC.

Valid BAFARA Club Stations: ON4BAF, Royal Technical School BAF Saffraanberg; ON6AF, Special event station BAFARA; ON6AP, 10W TAC Kleine Brogel.

Send requests/GCR list (or QSL cards for SWL) - cards will be returned - to: Lode Kenens ON6KL, Oudestraat 4, B-3560 Lummen, Belgium.

The fee for the award is \$US7.00 or 6 IRCs.

The Six-Twenty Eights Award

The following award came to me via the Twenty Eight Chapter of Ten-Ten International Inc.

In late 1986 a number of 10-10ers in Perth got together to form a new Chapter, the first in VK6, to be known as the "Twenty Eight Chapter". This Chapter was officially recognised in January 1987. The Chapter has continued to thrive and, in January 1997, celebrated its 10th birthday.

In looking around for a way to celebrate this great event, it was realised that 1997 was also 168 years after the settlement of Western Australia by Europeans.

"So what?" you may ask.

Well, 168 just happens to be "6 x 28", a good enough reason to celebrate with an award. Consequently, the VK6 Chapter members decided on a special award, to be available to users of the 28 MHz band, to mark the occasion. The award is also available to Short Wave Listeners.

Rules

1. All contacts must be made/heard on the 10 m band.
2. Any mode (CW, SSB, FM, etc) is acceptable.

3 (a). Stations in VK, ZL, and P29 to make two-way contacts with 28 stations from at least six of the 10 VK call areas, of which VK6 must one, with at least six VK6s being members of the "Twenty Eight" Chapter of 10-10.

3 (b). All other (DX) stations to make two-way contacts with 10 stations from at least six of the 10 VK call areas, with at least one VK6 member of the "Twenty Eight" of 10-10.

4. The "Six-Twenty Eights" award is available until 31 August 1998, with the possibility of extension to deal with conditions.

5. Logs of stations contacted/heard, together with your application, should be forwarded to: Dave Hanscomb VK6ATE, Certificate Manager "6 x 28" Award, PO Box 39, Quinns Rocks, WA 6030.

6. Cost of the Award is \$AUS5.00 for VK and \$US5.00 for all others.

The Chapter conducts nets every Sunday at 0210z and 0830z on 28.560 MHz +/- QRM. Any further questions should be directed via packet to: VK6NKB@VK6 WFLH.#PER.#WA.AUS.OC

ar

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of February 1998:

L21150 MR K PERRY
L21151 MS Y H MATHESON
VK2FLA MR R KOONCE
VK2GVA MR J L MORRIS
VK2MBG MR B J GOODCHILD
VK2NNN MR A MEREDITH
VK2SRN MR S R NELSON
VK5AQZ MR G C HORLIN-SMITH
VK5HAX MR C R TAYLOR
VK5RD MR L G BENJAMIN
VK5UDX MR R J BURTON
VK5ZLC MR M M GELL
VK6PEC MR P G BARRETT

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April's R&C re-introduces Chris Edmondson, VK3CE, as Editor. He's a man on a mission... Just read it to see!

- **THE CONSTRUCTION ZONE:** A new monthly home-brew column from Harold Hepburn, VK3AFQ.
- **THE SUN:** Understanding it can help you work out its effect on propagation. Here's a clear explanation...
- **ANTENNAS:** Another new column. We discuss antennas you can make every issue from now on.
- **JURASSIC QUARK** — or how to get an IBM-compatible computer for the shack for just \$15!! Why not?
- **REVIEWS:** This month, the exciting new Icom IC-746 and the absolutely incredible Yaesu VX-1R.
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Contests

Peter Nesbit VK3APN

Federal Contests Co-ordinator
PO Box 2175, Caulfield Junction, VIC 3161
pnesbit@melbpc.org.au

Special Prefixes

I recently received a call about the use of special prefixes by VKs in WIA contests. Apparently, some people have interpreted the ACA's ruling that "special prefixes will not be authorised for contests" to mean that the use of such prefixes in contests is forbidden.

This is not the case at all! The main intent of the rule is to stop every man and his dog applying for a special prefix, when there is no demonstrable public interest. If an applicant can demonstrate significant public interest, and meets all applicable ACA requirements for using a special callsign, then I doubt that anyone would want to know whether or not it was also used in a contest which coincided with the authorised event.

This is the only common sense interpretation. It can be argued that we are always contesting in one way or another, whether it is a formal contest, an activity period, how many stations we work during a call-back, where we stand on the DXCC ladder, or who currently holds a particular VHF distance record. Our competitive activities are all shades of grey, and efforts to find black and white interpretations just lead to a quagmire of ill-defined concepts of no legal significance.

Personally, I am delighted to see the emergence of special Australian prefixes during contests, as it makes things more interesting. In addition, we have lagged behind the rest of the world for far too long in this respect. To those who worry about the advantage that a special prefix might confer, don't forget that the holder will also have to contend with more requests for repeats, what is their QTH, who is their QSL manager, etc. Besides, special prefixes have become so common these days that I doubt they confer any significant advantage in comparison to all the other factors which determine the degree of success. As they say, variety is the spice of life.

For information and assistance this month, thanks to VK4NEF, VK4VW, I2UIY,

Contest Calendar April - June 1998

Apr 4/5	SP DX Contest	(Mar 98)
Apr 4/5	EA RTTY Contest	
Apr 10/12	JA DX High Band (CW)	(Mar 98)
Apr 11/12	King of Spain DX Contest	(Mar 98)
Apr 13	Low Power Spring Contest (CW)	
Apr 18	Australian Postcode Contest	
Apr 18/19	Holyland DX Contest	(Mar 98)
Apr 25/26	Helvetia DX Contest	(Mar 98)
Apr 25/26	SPDX RTTY Contest	(Mar 98)
May 2/3	ARI DX Contest (CW/SSB/RTTY)	
May 9/10	CQ-M DX Contest (CW/Phone/Mixed)	
May 16/17	Sangster Shield Contest (CW)	
May 30/31	CQ WPX Contest (CW)	(Feb 98)
Jun 6/7	IARU Region 1 Field Day (CW)	
Jun 13	QRP Day Contest (CW)	
Jun 13	Asia-Pacific Sprint (SSB)	(Jan 98)
Jun 13/14	ANARTS RTTY Contest	
Jun 13/14	South America WW Contest (CW)	
Jun 20/21	VK Novice Contest	
Jun 20/21	All Asia DX Contest (CW)	
Jun 27/28	ARRL Field Day	

LA9HW, OM6SA, PA3ELD, RW3FO, ZL1AS, and CQ. Until next month, good contesting!

73, Peter VK3APN

Low Power Spring Contest (CW)

1400-2000z, Monday, 13 April

Held by the Slovak Amateur Radio Association, this contest is scheduled for Easter Monday each year. Sections are single operator (single, three, and all bands). Power output categories (max) are: A: 1 W; C: 5 W; Q: 25 W; X: 50 W; Y: 100 W. Exchange RST, grid square, and power category (eg 579 QD24 X). Reception of RST is sufficient from non-contest stations. Score 18 points per QSO with OM stations, nine with stations in other continents, and three with stations in own continent. Multipliers per band are locators plus prefixes (WPX rules). Separate logs for each band. Send your log and summary sheet postmarked within 30 days to: Radioclub OM3KFV, PO Box 29, 036 01 Martin I, Slovakia.

2nd Australian Postcode Contest (SSB/CW)

0000-2359z, Saturday, 18 April

This contest is held on the third Saturday of April each year, in which the aim is for stations world-wide to work as many different Australian postcodes as possible. VK/VK contacts are permitted. Contacts made during this contest will be eligible for the **Worked all VK Postcode Award**.

The only category is single operator, all band, SSB or CW. Use 80-10 m (no WARC). Please note that, in this contest, VKs are not allowed to transmit in the 3.8 MHz DX window. VKs will send RS(T) plus their four

digit postcode, and DX stations will send RS(T) plus a serial number commencing with 001.

Score two points per contact within Australia, and 10 points per contact between Australia and another country. Countries are as per DXCC/WAE. The multiplier will be the number of different postcodes worked on each band in the relevant mode, with the band totals added together. Note that repeat contacts on the same band and mode are not permitted, EXCEPT with VKs who travel to different postcodes, who can be reworked for the new postcode. The final score equals the total QSO points from all bands times the total multiplier.

Logs must show: Date, UTC time, band, mode, callsign of station worked, numbers sent and received, new multipliers, and points. Attach a summary sheet showing: name, address, callsign, section, the number of valid QSOs and multipliers on each band, claimed score and a signed declaration that the rules and spirit of the contest were observed.

Send your log postmarked within 30 days to: Australian Postcode Contest Manager, Oceania DX Group, PO Box 929, Gympie QLD 4570; or fax it to 075 482 7497; or e-mail it to odxg@keylink.com.au. Logs on disk must be standard ARRL/ASCII format.

The overall winner will receive a plaque donated by VK4FW. Certificates will be presented to the station with the highest score in each section in each country, as well as runner-ups. A special award will also be presented to the highest scoring VK Novice in each section. Further awards may be made at the discretion of the Contest Manager. If you would like to sponsor an award, please

contact the ODXG Contest Manager at the above address.

Note that untidy logs may be disqualified, and unmarked duplicates will result in the loss of all points for the QSO as well as the deletion of three contacts following the duplication.

ARI International DX Contest (CW/SSB/RTTY)

2000z Sat to 2000z Sun, 2/3 May

This contest occurs each year on the first full weekend of May. Anyone can work anyone else, and categories are single operator CW, SSB, RTTY or mixed; multi-operator single transmitter mixed; and SWL mixed. Bands are 160-10 m (no WARC). The same station can be worked on the same band once each on CW, SSB, and RTTY, but the multiplier can be claimed only once for that band. Once a band or mode has been used, 10 minutes must elapse before it can be changed. Send RS(T) + serial number, Italian stations will send RS(T) + province.

Score 10 points per Italian QSO, three points per QSO with stations in another continent, one point per QSO with stations in own continent, and zero points per QSO with stations in own country. Final score equals total points from all bands times total multipliers from all bands.

Multipliers are the sum of Italian provinces (max 103) and countries (excluding I and ISO) on each band. Countries include one's own. Province codes include: 11: AL AT BC GN GE IM NO SP SV TO VB VC; 1X1: AO; 1Z: BG BS CO CR LE LO MI MN PV SO VA; 13: BL PD RO TV VE VR VI; 1N3: BZ TN; 1V3: GO PN TS UD; 14: BO FE FO MO PR PC RA RE; 15: AR FI GR LI LU MS PI PT SI; 16: AN AP AQ CH MC PS PE TE; 17: BA BR FG LE MT TA; 18: AV BN CB CE CZ CS IS KR NA PZ RC SA VA; 19: CL CT EN ME PA RG SR TP AG; 10: FR LT PG RI ROMA/RM TR VT; 1S0: CA NU SS OR.

Use a separate log for each band, and a check log (ie sorted callsign list) for 100+ QSOs on any band. Send log within 30 days to: ARI Contest Manager I2UTY, PO Box 14, I-27043 Brioni (PV), Italy. Logs on disk are welcome, but please include a printed summary sheet. Alternatively, logs can be e-mailed to ari@contesting.com.

Sangster Shield (CW)

0800-1100z Sat and 0800z-1100z Sun, 16/17 May

This unusual contest emphasises low power operation. The object is to work as many ZLs on 80 m CW as possible. QSOs can be repeated once per 1/2 hour period, ie 0800-0830, 0830-0900, etc. At least five minutes must elapse between repeat QSOs with the same station, or else another station must be worked in between. Send RST plus power

output; ZLs will send their RST/branch/power. Non-ZLs using up to 5 W score 10 points per QSO with a ZL, if the ZL worked is using up to 5 W; or five points per ZL using over 5 W. Non-ZLs using more than 5 W score five points per QSO with a ZL using up to 5 W. QSOs between stations where both use more than 5 W are invalid for the contest. Final score equals total points times number of ZL branches worked. Send logs to reach: Contest Manager ZL3KR, 4 Exton Street, Christchurch 8005, NZ by 12 June. Certificates will be awarded to the highest scoring non-ZLs in their respective call areas.

42nd CQ-M Contest (CW/Phone/Mixed)

2100z Sat to 2100z Sun, 9/10 May

Sponsored by the Krenkel Central Radio Club, this contest runs on the second full weekend of May each year. Categories are single operator, single and all band; multi-operator single transmitter; QRP (5 W max); SSTV; SWL. Bands are 160-10 m. Multi-band entrants can also work through radio amateur satellites, in which case these QSOs count as an additional band.

Modes are CW, SSB, and mixed. No cross-mode QSOs please. Entrants in the mixed section can only make one QSO with each station per band.

Call "CQ-M", and exchange RS(T) (or RSV on SSTV) plus serial number. Score one point per QSO with own country, two points with a different country in the same continent, and three points with other continents (continents as for WAC). The final score equals total points times total number of countries from each band. Countries are according to the R-150-C list, which is similar to the ARRL DXCC list except for former USSR countries.

Serious competitors should review the R-150-C list. SWLs should claim one point for complete logging of one callsign in a QSO, or three for complete logging of both sides of a QSO. SWLs have no multipliers. Use a separate log for each band, and mail logs by 1 July to: Krenkel Central Radio Club, CQ-M Contest Committee, Box 88, Moscow, Russia. Please include a dupe sheet for 100 or more contacts, and a multiplier check sheet for 200 or more contacts. A wide range of awards is offered.

The CQ-M homepage is at www.mai.ru/~crc/cq-n/cqmain_e.htm. For additional information about Russian contests, see the Krenkel CRC web site at www.mai.ru/~crc.

Results of 1997 Jack Files Memorial Contest

Presented by Peter VK4VW

* = trophy winner

CW:

VK4EMM *	4323
VK3APN	2074

VK1WI	924
(opr VK1FF)	
VK4BAZ	728
VK4ICU	490
Phone:	
VK4PJK *	9520
VK4BAZ	8056
VK4AGW	7035
VK4MGA	6528
VK4MOJ	5776
VK4LAJ	2952
VK4DO	1219
VK1WI	714
(opr VK1FF)	
VK4JAE	504
VK1PK	468
VK2LEE	385
VK4LUV	286
VK4PVH	202
ZL1AGO	130
VK5UE	126
Club:	
VK4BAR	3017
SWL:	
L40380	9520
(Patricia Johnston)	
Highest Novice Score:	
VK4PJK	9520

Results of 1997 PACC Contest

(call/QSOs/mult/score)

VK8AV	78	23	1,794
VK2APK	44	18	792
VK4XA	39	11	429
VK4ICU	9	6	54
VK4TT	6	4	24

Results of 1997 ARI DX Contest

(call/section/QSOs/mult/score)

VK2APK	SOCW	451	122	182,783
VK8AV	SOCW	127	75	45,874
VK3APN	SOCW	23	17	1,994
VK4TT	SOCW	23	13	1,504

Results of 1996 CQ-WPX SSB Contest

(call/band/score/QSOs/prefixes)

* = certificate

Single Operator, Open:

VK5GN *	A	2,940,820	1592	545
VK8HZ *	A	1,154,304	1143	334
VK4MV *	A	4,774	54	31
VK3DXI *	A	1,043,400	835	444
VK2ARJ *	A	398,880	537	277
VK4EET *	A	7,800	47	44

Single Operator, Low Power:

VK2YM *	A	336,514	462	226
VK2AYD *	A	221,076	370	207
VK3NDS *	A	159,030	320	171
VK2APK *	A	317,520	416	280
P29MO *	A	1,403,231	1160	416

Multi-operator:

VK4MZ	3,805,206	1781	551
VK1DX	2,959,530	1781	510
VK6ANC	1,596,718	1196	454

Not so long ago, I heard the following brief QSO on one of the popular afternoon HF nets.

Breaker: "Net control, can I have a contact with ABC who is on the net?"

Net controller: "Go ahead".

Breaker to ABC: "Do you copy me?"

ABC to Breaker: "Yes."

Breaker to ABC: "Did you receive my e-mail. I sent it three days ago?"

ABC to Breaker: "No, not yet, but I will check with my server after the net."

Breaker to ABC: "Good, send me a return e-mail. Thanks net Control. I will now QSY."

All this in the middle of a busy net. For a moment I did not know what to think about this short QSO between two Australian amateurs on the 20 metre band. Then it dawned on me. In this modern world of technology, two amateurs used the "wireless radio" to check on the movements of a message sent three days before on the "wire".

The world has gone topsy-turvy. Good old Marconi and his invention of the "wireless apparatus". His revolutionary technology is now slowly overtaken by an even older technology, "messages sent over the wire".

Highwater - VK8DK

I received a lengthy letter from Len VK8DK from Katherine, NT which was extensively flooded on Australia Day, 26 January. Len's letter was dated 29 January, but date-stamped at the Katherine Post Office on 24 February which would indicate that it took almost four weeks for the post office to become functional again.

Len moved to his new town in September 1997 and by December he finalised his plans to build a galvanised steel framed house about one km away from the Katherine river and well above the "once in a hundred years" flood level.

"My shack was flooded with 60 cm of water, the house frame is under two metres of water and one third of our personal belongings were wrecked," writes Len. "My transceiver remained dry, approx 200 mm above the final flood level. Interestingly, my electrical switchboard, which was completely submerged in the waters, remained fully operational during and after the flood."

Len would like to express his thanks for the help given to him and his family (who were isolated in another part of Katherine) by his fellow amateurs. His special thanks go to VK6LC, VK3WE, VK5FV, VK4CPA, VK3JK, VK4AGT, VK4GLD and VK8XC. Len closed his letter with these lines: "A helicopter landed this morning in my yard while I enjoyed my first shower in three days. They were just checking. I asked the crew if they had any food but not the baked beans

How's DX?

Stephen Pall VK2PS
PO Box 93, Dural NSW 2158

variety. They gave me a glad bag of food. I never knew that Nutri-Grain and milk tasted that scrumptious."

Bouvet Island - 3Y0

The southern hemisphere's summer, "The Austral Summer" as it is called, draws the Antarctic DXpeditions like a pot of honey draws the bees. In January 1997 it was Heard Island, in December 1998 and January 1999 it will be Bouvet (Bouvet0ya) Island.

The South Sandwich Island DX group will activate this very rare DXCC country with a planned two week stay. As with the past two expeditions under the SSIDXG banner (VP8SSI in 1992 and 3Y0PI in 1994) the SSIDXG plans a very comprehensive DXpedition with operation on all bands and all modes, including satellite. They plan to have four stations operational around the clock. The team consists of at least 10 operators made up of seasoned

DXpeditioners from the previous VP8SSI (South Sandwich) and 3Y0PI (Peter I) operations, plus other skilled operators.

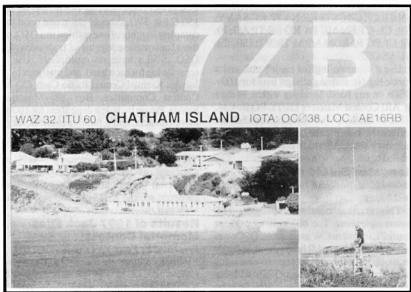
Bouvet Island (Bouvet0ya) is a Norwegian territory located in the sub-Antarctic area at 54° 24' South and 30° 25' East. Formerly known as Bouvet Island, Bouvet0ya is the southernmost island of the mid-Atlantic ridge. It consists of a single volcanic cone, with a wide indented crater, attaining a maximum elevation of 780 m (2560 feet) at Olaf Peak at the island's centre.

Iris Colvin - W6QL - Silent Key

Iris Colvin W6QL of Richmond, California, died on 18 February 1998 at her home. She was 83. For the older generation of DXers, Iris and her late husband, Lloyd W6KG who passed away in 1993, were DXing legends. Between 1960 and the early 1990s they travelled the world carrying their transceivers and antennas with them. They operated from over 100 DXCC countries, many of them places where amateur radio did not exist or was forbidden.

Many of the present DXCC Honour Roll members have at least one QSO on their register as a new country due to the efforts of Iris and Lloyd. The DXing couple were married 55 years. They made over a million contacts and their QSL collection, more than half a million cards, occupied a great proportion of their house. The DXing effort by the Colvins was recognised by the ARRL. They were named Amateur Radio Ambassadors of the Decade 1980-1990.

Lloyd made sure that future DXing activities received some monetary assistance after his death. He took out an old fashioned



Lothar DJ4ZB operated from Chatham Island in 1997 as ZL7ZB.

Endowment Life Insurance policy early in his life, for which he paid the premiums, and the ARRL was the beneficiary. The Colvin Award was established in 1994. The award disburses grants to support ham radio projects that promote international goodwill in the field of DX. Last year's Heard Island DXpedition was a recipient of that award.

The Colvins travelled under the sponsorship of the Yasmie Foundation which was also their QSL manager. The Colvins visited Australia in January 1990 and, whilst Australia was not a rare DX country, in a very short period of time they had over 4000 QSOs and worked 143 countries with the VK2GDD callsign.

When in Sydney, they gave an "on air" interview at the broadcasting facilities of the WIA NSW Division during the regular Sunday news broadcast and conducted the "call-backs" afterwards. That Sunday broadcast was a memorable occasion for me because, among other things, it was I who asked the questions and the Colvins gave the answers. Subsequently the Colvins conducted a DX seminar at Amateur House in Parramatta, dispensing their DX know-how to those present. The passing of Iris closed a golden chapter of amateur radio DXing. If you are interested, read further news about the Colvin's Australian journey in the March 1990 and January 1991 issues of *Amateur Radio*.

Mongolia - JT

Kerry VK4MZ left on 24 February for Japan where he will spend eight days with four different JA families. From there he goes to Beijing for six to eight weeks. Kerry hopes to be able to work some VKs whilst in Japan and China. During his stay in China he will visit Mongolia and hopes to be active with a JT1F (plus two letters) callsign in the CQ WPX Contest on 28 and 29 March from station JT1BV. He also hopes to be active outside the contest operating on the "low bands".

By the end of April he will be back in Gympie via Japan and Brisbane. QSL will be direct only to his home address; for a variety of reasons, no bureau cards please. Send your card to K Viney, PO Box 381, Gympie, QLD 4570.

Future DX Activity

* **Guam - N2NL/KH2.** Dave will be in Guam for two years. He works CW only on 160, 80 and 40 metres.

* **Campbell Island - ZL9CI.** This expedition will take place in January 1999, according to Ron ZL2TT.

* **Sudan - ST2.** If you need this country be on 20 metres around 14200 kHz every Friday at around 0500 UTC. Abdullah 9K2GS is

conducting an informal Arab net in which Dr Sid ST2SA takes part.

* **Annabon/Pangalu - 3C0.** This activity was planned for the first two weeks in March. It did not take place due to the dangerous situation in that part of the world.

* **Sri Lanka - 4S7.** Mario HB9BRM will be active from here for about three months beginning 3 March as 4S7BRG. QSL via the bureau to HB9BRM.

* **Vietnam - XV.** Anders SM0ORV has recently been licensed as XV7SV in Hanoi. He has modest antennas and he has to operate on fixed frequencies of 3526, 7026, 10135, 14212 and 21235 kHz. QSL via his home call, or via the bureau to his home call. He will reply to the cards after he returns to Sweden in June.

* **El Salvador - YS.** Federico YS1FEA says that he, Roberto YS1CQ and Oscar YS1SH will be operational on 7055 kHz around 0200 to 0330 UTC. QSLs for all three go to PO Box 517, San Salvador, El Salvador, Central America.

* **Jan Mayen - JX.** Per JX7DFA can be heard on Saturdays on 18090 kHz from 1400 to 1500 UTC. QSL via JX7FDA, N-8099 Jan Mayen, Norway, or via home call LA7DFA.

* **Niue - ZK2.** Albert HB9BCK will be active from 2 to 16 April as ZK2CK on 80 to 10 metres, including WARC bands. QSL to HB9BCK via the bureau or direct (two green stamps).

* **Cuba - CO2.** Winston CO2WF is active around 14151 or 21215 kHz between 1900 and 2100 UTC. QSL via VE2EH.

* **Mongolia - JT.** A group of seven Italian amateurs will operate as JT1Y from Ulan Bator for one week starting on 7 April. They intend to have at least two stations on the air around the clock on all HF bands on SSB, CW and RTTY. The group will use the facilities of the Club station JT1KAA. QSL via Nicola Sanna I0SNY, Str Gualtarella 8/M, 06132, S Sisto, PG, Italy.

* **Montserrat - VP2M.** Art N2NB is active as VP2MDY from Montserrat one weekend a month for the next eleven months. QSL via NW8F.

* **Morocco - CN.** Ray F5LMK will be active on 10-80 metres SSB as CN/F5LMK between 9 and 16 May.

* **Guernsey - GU.** Bill G4YWY will be active as GU4YWY/m from this island between 9 and 14 April. QSL to home call.

* **Guernsey - GU.** Jean-Marc F5SGI will be active (mostly on 10-40 metres CW) as

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Ask for Rick VK3KNC**

GU/F5SGI between 11 and 17 April. QSL to home call direct or via the bureau.

* **Crozet - FT5W.** Jean-Paul F5BU arrived on Possession Island, Crozet at the beginning of February and operates as **FT5WG** around 1630 UTC on 14183 kHz. QSL via Andre Jungbluth F6APU, 4 Rue de Tulipes, 67380, Lingolsheim, France.

* **Cameroon - TJ.** Tim TJ1FT was reported to be active until July or August. Look for him around 2300 UTC on 14220 kHz. QSL via PO Box 41, Makak, Cameroon, Africa.

* **Equatorial Guinea - 3C.** Ramon 3C1GS is active on 80, 40 and 20 metres. QSL, via Anselmo Bernabe Coll EA5BYP, Box 3097, 03080 Alicante, Spain.

* **Nepal - 9N1.** Hennig (ex-OZ2CU and ex-A22CU) is now active again from Katmandu as **9N1CU** on 80, 40 and 20 m for two to three years. QSL direct to PO Box 4010, Katmandu, Nepal.

* **Zambia - 9J2.** Aki JA0JHA will be working in Zambia until the end of the year.

* **Chatham Islands - ZL7.** Ed K8VIR advises that as from 1 March he will be operating as **ZL7IR** portable whilst he is on the mainland of New Zealand, and then from the middle of March from Chatham Island proper. It is also reported that he will be in Tonga in April/May as **A35VI** on 14260 and 21300 kHz SSB. As from now, all mail has to be sent to his stateside address: Ed Hartz K8VIR, PO Box 480, Green Valley, 85622-0480, AZ USA. Ed says that the **ZL7IR** QSL will be a special "Chatham Islands Heads The World into the Third Millennium" card.

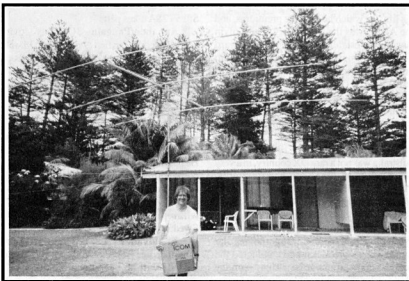
Interesting QSOs and QSL Information

* **A43XXV** Noor - 14199 - SSB - 1204 - Dec. QSL to Royal Omani Amateur Radio Society, PO Box 981, Muscat, 113, Oman.

* **E22AAD** - 14257 - SSB - 1202 - Dec. QSL via DL7FDK, Ralf Klinger, Feldstr 7, D-61479, Glashuetten, Germany.

* **H441Q** - 14205 - SSB - 1024 - Dec. QSL via DL7VRO, Fritz Bergner, Sterndamm 199, D-12487, Berlin, Germany.

* **9M2TO** Tex - 21030 - CW - 1031 - Dec. QSL via JA0DMV, Terutsugo Izumo, 2-2-27-504 Akamidai, Kuonosu, Saitama, 365 Japan.



Frank VK2EKY on Lord Howe Island with his Yagi beam in January 1998.

* **XX9ER** Freeman - 21232 - SSB - 0502 - Dec. QSL via PO Box 6018, Macau.

* **9N1FP** Vladimir - 14260 - SSB - 1204 - Dec. QSL via RU6FP, Vladimir Zakharov, Kulakova, 27/2 - 116, Stavropol, 355044, Russia.

* **V73UX**, Dave - 14190 - SSB - 1217 - Dec. QSL via V73AX, Kwajalein ARC, PO Box 444, APO AP 96555, USA.

* **AP2JZB** Bab - 14184 - SSB - 1323 - Dec. QSL via Jahanzeb Arbab, House 13, Street 15, Khayaban Tovheed Phase V, Defence Housing Authority Karachi, Pakistan.

* **ZP5MAL** Juan - 14241 - SSB - 0950 - Dec. QSL via Dr Juan F Duarte Burro, PO Box 34 1209, Asuncion, Paraguay, South America.

* **T88KH** Hide - 14040 - CW - 1004 - Jan. QSL via JM1LJS, H Kai, 915 Takata, Kohoku, Yokohama, Kanagawa, 23800, Japan.

* **CO2WF** Winston - 14229 - SSB - 0728 - Jan. QSL via VE2EH, Pierre Gagnon, Apt 8 6863 Beaubien East, Montreal, Quebec, H1M 3B2, Canada.

* **9N1AT** Hara - 14195 - SSB - 1057 - Jan. QSL via JH8XIX, Shigemi Harada, 30-38 Midori Gaoka, Kitami, Hokkaido, 090 Japan.

From Here and There and Everywhere

* It is with deep regret that I report the passing of Ken Stevens VK5QW. Ken was not heard recently on the bands because of his failing health. He was a great DXer, well known not only in Australia but also overseas, especially in the United States. Ken was a humanitarian and supporter of many

good causes without seeking publicity. He was a strong supporter of this column and, whilst I never met him in person, I will never forget his friendship and wise counsel. Ken's great sorrow as a DXer was that he never worked North Korea P5. Vale, Ken. Have great DX in the sky.

* **Azerbaijan.** This republic of the former Soviet Union celebrated the 80th year of its establishment as an independent nation by using the special prefixes of **4JA** and **4KA**.

* The QSL manager for **TZ6JA** is JA3EMU, and not JA3EMJ as reported earlier. JA3EMU is Toshiyuki Tanaka, PO Box 4, Katano, Osaka 576, Japan.

* An interesting callsign, **1X5AA** was heard in the middle of February on 15 metres CW, causing a big pile-up. The operator was Hamzat RW6PA who was transmitting from Grozny, the partly destroyed capital of the rebel republic of Chechnya, using the prefix **1X5** which most likely is not approved by the ITU.

* The "European DX Net", due to the improved conditions, is again active on 14243 kHz on Saturdays and Sundays around 0600 UTC.

* **V16EWT**, a special callsign, commemorates the 120th anniversary of the opening of the East-West telegraph. The callsign was used by the Northern Corridor Radio Group VK6ANC during the John Moyle Memorial Field Day contest, 21-22 March 1998, on HF, 2 m and 70 cm from Eucla, WA. After the contest, the special callsign was aired on HF bands, using both SSB and CW, for a further two weeks from Perth, WA. QSL via VK6ANC, Northern Corridor Radio Group, PO Box 244, North Beach, WA, 6920.

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* **Ed K8VIR/ZL4** started sending out his special QSL cards to those who worked him when he was in the "Fjord County".

* **Amsterdam Island - FT5Z.** Mehdi F5PFP, who co-ordinated the last weeks' activities of Eric FT5ZG in December last year, hopes to visit Amsterdam Island as a DXpedition in December this year. Being on a DXpedition, and not being part of a scientific team, will give Mehdi ample time to give many VK/ZLs a new country if the propagation is right.

* **Kingman Reef - KH5.** Chuck had a short 24 hour visit to this desolate coral reef and made many VKs happy with a QSO. An unexpected fishing vessel travelling from Palmyra (which is about 35 miles away from Kingman Reef) to the reef transported Chuck there. Most of the reef is submerged, but a strip of packed clam shells, about 185 metres long and about 6-10 metres wide, is about four metres above the high water level. This is where Chuck landed with his Zodiac, carrying his 20 and 40 metre dipoles, a small tent and his radio gear. I heard him say that he intended to go without sleep until the boat returned to pick him up. QSL via Mark D McIntyre Sr WA4FFW, 2903 Maple Ave, Burlington, NC 27215, USA.

* **Armenia - EK.** Sergei EK4JJ is now active as **AK1700JJ** to celebrate 1700 years of Christianity. QSL via GW3CDP.

* **Bahamas - C6A.** Dick C6A/N4RP reminds everyone that the correct and only QSL route for contacts with him for the past several years is PO Box 030323, FTL, FL-33303-0323, USA.

* **Vietnam - Rolf XV7SW.** Having served four years in Vietnam, has returned to Sweden. If you still need a card from him, send your card to Rolf T Salmé, Korpstigen 5B, S-13551, Tyreso, Sweden.

* **Wake Island - KH9.** During the first week in March four USA operators activated this island under their own call signs /KH9. QSLs to be sent to Robert Pond WA4YBV, 9 River Cove, Portsmouth, VA 23703, USA.

* **The 8Q7AA DXpedition** logged more than 17,000 QSOs. Send your card to Steve Thompson N7TX, 119 E Jasmine St, Mesa, AZ 85201 - 1811, USA.

* **Zbig-Frank VK9EKY** advises that he started QSLing on 21 February after receiving his cards from the printer. His QSL address is via 7J6AAK/2, Frank Z Murdzia, 3-8-41 Shijimizuka Hamamatsu-City, Shizuoka-Ken, 432-8018, Japan.

* **Deal BA4TB** advises that his QSL manager is 9A2AJ.

* **Harv XU2FB** is now active with the unusual callsign of XUF2B.

* **Antarctica - KC4US.** The operation of military calls like KC4USV, KC4USX and

KC4USL, active during the last few years, came to an end on 11 February. Operation "Deepfreeze" and its support group, Command US Naval Support Force Antarctica, held a flag lowering ceremony at McMurdo Station.

* **Alaska QSL Bureau.** The new address for the Alaska QSL Bureau is PO Box 520343, Biglake, Alaska, 99652, USA.

* **Spradly Islands - 9M0C.** The UK Chiltern DX Group closed this station at 2200 UTC on 23 February. They had made 64,700 QSOs, including 975 on 160 metres. This was an excellent, disciplined operation using first class CW, with clear and excellent indication of the callsign and instructions re "listening up".

Pounding Brass

Stephen P Smith VK2SPS
PO Box 361 Mona Vale NSW 2103

Morsum Magnificat, the official Morse magazine of the United Kingdom, will cease publication at the end of the year unless someone steps forward and takes over from

Scrambles 1988

No	Date	Frequency and Time
86	16 April	80 Metres 1000 UTC
87	27 April	160 Metres 1000 UTC
88	17 May	20 Metres 0600 UTC
89	21 May	80 Metres 1000 UTC
90	18 June	80 Metres 1000 UTC
91	16 July	80 Metres 1000 UTC
92	19 July (Sunday)	40 Metres 0600 UTC
93	20 August	80 Metres 1000 UTC
94	24 August (Monday)	160 Metres 1000 UTC
95	17 September	80 Metres 1000 UTC
96	20 September (Sunday)	20 Metres 0600 UTC
97	15 October	80 Metres 1000 UTC
98	15 November (Sunday)	15 Metres 0500 UTC
99	19 November	80 Metres 0930 UTC
100	17 December	80 Metres 0930 UTC

160 Metres = 1815-1820 kHz
80 Metres = 3525-3535 kHz
40 Metres = 7020-7028 kHz

20 Metres = 14050-14060 kHz
15 Metres = 21125-21135 kHz
10 Metres = 28155-28165 kHz

QSLs Received

9N1FP (5 w from JM2HBO); J6/PA3EWP (4 m - PA3ERC); JT1FBT (15 m - N17T); 3V8BB (2 w - JF2EZA); T94B (9 m - N9JR); and R1FJR (4 m - F5PYI).

Thank You

My gratitude goes to those who "keep the flag flying" by supplying me with a lot of useful information. Special thanks to: VK2EFY, VK2ICV, VK2KFU, VK2TJF, VK2XH, VK2ZRH, VK4BAY, VK4MZ, VK8DK, VK9LX, K8VIR/ZL4, the ARRL Letter, *QRZ DX*, *The DX News Letter*, *The 425 DX News*, and SSIDXG.

Tony Smith G4FAI and Geoff Arnold G3GSR.

I'll keep my fingers crossed that somebody will be found before the year is out and that the publication will continue for many more years to come. All the best to Geoff and Tony for your continued support over the last couple of years.

The intended article on Morse examinations will appear in May's issue. Instead of this, I've included a list of scrambles which should see you out for the remainder of the year. The scrambles are of one hour duration and are run by the "CW Operators QRP Club" (thanks to Ian VK3DID for the updated list).

Improved Conditions

Over the past weeks we have had significant improvement in propagation, especially on the higher frequencies. After an absence because of low sunspot numbers, 17 and 21 MHz have been producing some signals. It is also very apparent that many users have not been using these frequencies. The 13 metre broadcasting allocation is very sparse. I do wonder if these channels will again roar into life.

The 11 metre allocation between 25600 and 25700 kHz has been virtually abandoned. The BBC UK senders and Radio France International mainly utilised this allocation for re-broadcasting to Africa and the Middle East. Some low powered FM and AM studio-to-transmitter links have been heard up in this allocation, mainly in the USA.

Satellite TV Crashes in SE Asia

The current Asian economic crisis has impacted on satellite television, particularly in ASEAN countries. Many transponders are silent as the operators can no longer afford them. Satellite receiving equipment has also become so expensive that the market for these has dried up. This will mean that many international broadcasters, who were depending on satellite TV feeds, will have to dramatically revise their strategy. Clearly, inexpensive short-wave receivers will be used to obtain international programming instead of satellite technology.

Digital Broadcasting Problems

Broadcasters and receiver manufacturers have recently been considering digital technology to replace analogue modes.

There are several competing digital platforms, but manufacturers are somewhat hesitant to get involved in mass production until a clear standard emerges. There are primarily two major systems that are incompatible. One is Eureka 147, a European system backed by the EBU and major manufacturers. The other one is an American Direct broadcasting model. The Americans will not allow the Eureka system in their markets and the Europeans retaliate by not permitting the American system into Europe.

Development of Eureka 147 is advanced while the American system is still in the experimental phase. A DBS satellite is scheduled to be launched later this year, or in 1999, with 100 channels. Primary markets are supposed to be Africa and Asia. Yet it could be an economic graveyard as the cost of a specific receiver would be beyond the reach of an ordinary person.

The European system will naturally focus on that area which is developed and

Spotlight on SWLing

Robin L Harwood VK7RH

5 Helen Street, Newland TAS 7250

(03) 6344 2324

e-mail: robroy@tassie.net.au
VK7RH@VK7BBS@LTN.TAS.AUS.OC

economically stable. Both systems heavily rely on sets being available at a reasonable price. As mentioned earlier, manufacturers are hesitant to commit themselves because the technology will initially be expensive.

The Americans are well advanced on another digital modulation system utilising the existing AM and FM band allocations instead of direct broadcasting satellite systems. There has been quite a deal of media hype that audio quality would significantly improve compared to existing analogue modes. The amount of required bandwidth remains the same. Digital compression techniques have made this feasible.

This proposed model will probably come to fruition as there are quite a number of hassles with DBS, such as reflections, multipath distortion, and difficulty in ascertaining where the satellites are, etc. Using the existing infrastructure makes it economically feasible for broadcasters and manufacturers.

There has been some experimentation with digital broadcasting over short-wave. The VOA, in co-operation with the JPL Laboratories in Pasadena, has conducted some testing of a prototype from the Delano senders. Deutsche Telecom has also been developing a system which has analogue and digital on adjacent channels. This last system has some merit, as the changeover is likely to take some time. However, digital broadcasting over short-wave is still an unknown quantity. Although there is some slight improvement, deep fading is still a problem.

Tahiti is back on Short-wave!

The French Polynesian Island of Tahiti has been heard again after an absence of about 12 months. Formerly, it was drifting about on 15165 kHz +/- . Now, a brand new sender has been well heard here in the South Pacific on 15170 kHz. This appears to be the sole frequency and it is operational there for 24 hours. From 1000 UTC until about 1700

UTC it relays a satellite feed from Paris with local programming for the rest of the day.

I remember listening to the authentic Polynesian music in the mid-afternoons. Probably now they broadcast Rap or Heavy Metal instead. It has been a while since Radio Noumea left short-wave. That was another easily heard station here as it was on 7170 kHz. Now, Noumea can only be heard on 666 kHz when the ABC in Canberra has a deep fade.

Short Snippets

No news yet on Radio New Zealand International. The future is unclear as the NZ Government is reviewing funding for the continuation of the service. Incidentally, Wellington is easily heard on 17675 kHz from 2257 until 0500 UTC.


Radio Canada International was also pleased to receive continued funding for international broadcasting for another three years. This will allow them to update their facilities. More effort is to be placed on Internet Real Audio as this has proved to be quite popular.

Deutsche Welle has also concluded an agreement to broadcast to SE Asia via the Kranji transmitters in Singapore. As you may be aware, all former BBC transmitting sites were privatised and there was a management buyout of the external service senders. This has opened up these sites to relay agreements with other broadcasters, such as RAI in Rome and Radio Japan, now known as NHK World, which have been using Kranji for some years. Now, DW will be using the site between 2300 and 2350 UTC on a 7 MHz frequency.

Don't forget that most of the Northern Hemisphere went on to daylight saving on 28 March until the end of October. The majority of international stations made their frequency alterations at that time to take account of propagation. North America goes on to Daylight Saving on 26 April. Please note that there is one Canadian province that does not alter their clocks. I think it is either Saskatchewan or Alberta.

Well, that is all for April. Until next month, keep listening and 73.

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Your Hobby
Representing Radio Amateurs Since 1910

Your Voice

The Voice of Russia World Service has been transmitting an English language program on 7.100 MHz in the 0445 to 0600 UTC time slot. It appears to be aimed at VK and ZL.

Observers are asked to monitor this transmission and, once verified, either contact VOR direct QTHR, or send details in the next regular report to their Intruder Watch Co-Ordinator.

I am well aware of complaints reaching this intruder, and the Russian Chief of Broadcasting has complained about them, saying there is no breach of the regulations.

He needs to receive further complaints to convince him that VOR is broadcasting consistently on 7.098 MHz – all of our receivers can't be wrong!

In another hot spot of intrusion, a push is underway to target positively identified Indonesian intruders. More IW observer log entries are needed on these with as much "off air" information as possible.

Intruder Watch

Gordon Loveday VK4KAL
Federal Intruder Watch Co-Ordinator
Freepost No 4 Rubyvale QLD 4702
VK4KAL @ VK4AUN-1
Tel: 07 4985 4168

Ideally observers, through careful listening, can identify the station by its callsign, announced location, mode of transmission, type of program, and whether a male or female announcer.

Broadcasters are usually not hard to identify because they are required to identify themselves every hour, usually on the hour. Have a tape recorder running to help ID them.

There is also still a large number of "Asian" intruders being reported. The languages are difficult to separate, and there are many dialects.

The most commonly used language by Indonesian intruders is Bahasa Indonesia, a form of Malay. With improving band conditions, it is possible to hear local Indonesian broadcast stations using this language.

A number of Morse code messages in code groups are being reported. Very few of this type of message originate in Region 3. Most are from the Region 1 area with the Russians being the most reported.

My thanks to the Region 3 Co-Ordinator, ZL1CVK, for this information.

ar

National co-ordinator

Graham Ratcliff VK5AGR

E-mail: vk5agr@amsat.org

AMSAT Australia net:

Control station VK5AGR

Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

Primary 7.068 MHz (usually during summer).

Secondary 3.685 MHz (usually during winter).

Frequencies +/- QRM.

AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide SA 5001

Keplerian Elements

Current keps are available from the Internet by accessing the AMSAT FTP site, <ftp.amsat.org> and following the sub-directories to "KEPS".

AMSAT

Bill Magnusson VK3JT
RMB 1627, Milawa VIC 3678
e-mail: vk3jt@amsat.org

New Edition of An Old Favourite

AMSAT-NA recently made the announcement: "AMSAT is pleased to announce the arrival of the new *Satellite Experimenter's Handbook*, authored by Dr Martin Davidoff K2UBC. This brand new edition contains valuable information on satellite operating, types of antennas including articles on building your own equipment, software, satellite Internet sites, profiles of all the current active satellites and much more. This edition has 375 pages and is filled with information, including how to prepare for the new Phase 3D satellite".

The book's first edition has certainly made its mark in amateur radio satellite circles, winning a place on the bookshelves of newcomers and old-hands alike. This new

edition should become a must for all amateur radio satellite buffs. Check local sources; it should be on the shelves by the time this goes to print.

All You Ever Wanted to Know About InstantTrack

I have been associated with amateur radio satellites since OSCAR 1, and the program that has made the broadest impact and earned the title "ubiquitous" has undoubtedly been Franklin Antonio's timeless *InstantTrack*. Apart from a few cosmetic patches designed to keep up with computing advances, version 1 runs as well today as it did when it first took the satellite scene by storm in 1989, a great tribute to the author.

AMSAT VP, Paul Williamson KB5MU who was originally responsible for writing the "OrbitDRV" TSR accessory, announced recently via AMSAT News Service that he has just completed and published a set of FAQs, or frequently asked questions, for *InstantTrack*. You can find them on the AMSAT-NA world wide web site, or as a downloadable document at the AMSAT FTP site; the file is about 40 Kbytes. As a text file it contains much valuable information. It is a compendium of all the questions (and answers) you would ever be likely to ask about the operation of *InstantTrack*. It has many links to other web sites and for this reason is probably most valuable if browsed on-line.

Worrying News from Guatemala

Earlier this year the Telecommunications Authority in Guatemala auctioned off four frequencies between 430 MHz and 435 MHz for commercial use, despite their use by amateur radio operators in that part of the world. Amateurs in the region have been trying to convince authorities not to auction spectrum that is shared by amateurs to commercial users for over a year but, as is often the case, the money that could be gained through such a frequency auction spoke much louder than reasonable arguments by hams against the selling of spectrum rights to the highest bidder.

Mexico also recently lost UHF amateur band spectrum to commercial interests, and this appears to be a disturbing trend. Although the 430 MHz to 435 MHz spectrum loss in Guatemala does not directly affect OSCAR satellite communications, a precedent has now been set. There is no guarantee that frequencies within the 435 to 438 MHz UHF amateur satellite sub-band will not be auctioned off to the highest bidder in the future.

The implications of frequency auctions involving spectrum used by OSCAR satellites are staggering. While commercial interests buying rights to UHF spectrum are primarily concerned with short-range communication services, it is well known that even low-power transmissions can be relayed half a world away via a transponder carried on-board a communication satellite in earth orbit.

The situation is not all doom and gloom, however. Frequency allocations used in amateur radio satellite communications did fare well at the World Radio Conference held in Geneva, Switzerland late last year. WRC 97 delegates did agree to upgrade the Earth Exploration Satellite Service from secondary to primary at 1215 MHz to 1300 MHz, which should have only minimal impact on amateur use of 1240 to 1300 MHz, while the presence of these satellites reduces the possibility that other, less-compatible services might later be introduced into this band.

From "SpaceNews".

Electrical Storms and Your Equipment

Geoff VK4GWC describes a problem that we have nagged at us all from time to time.

**Have you advised
the ACA of your
new address?**

What to do when an electrical storm approaches? In Geoff's words, as uploaded to KO-23: "Hello all, this message describes the breakdown of my KR5400 controller which, based on the circumstances, is presumed to have been caused by an electrostatic discharge during a thunderstorm. As the severity of damage caused by such discharges varies widely, I doubt if there are any lessons to be learnt from this report other than the obvious one. Nevertheless here is the report for anyone interested in the technical nature of someone else's minor equipment calamity.

"Circumstances: At midday on 23 Dec 98 a short-lived but violent storm (ie lightning discharges closer than 1000 m) passed directly over my QTH. All antenna feed lines and masthead pre-amps were disconnected from equipment before the storm arrived and all power outlets in the radio room (my study) were isolated by a single DP switch. The KR5400 AZ-EL was, therefore, switched off, but the rotator cables were NOT disconnected from the controller (although line connectors are provided for the two cables).

"Symptom: When the controller was switched on that evening both meters went hard full scale.

"Fault Finding: Rotators OK electrically and mechanically. Masthead pre-amps for 2 m and 70 cm OK. No evidence of burning inside controller. Q2 (UA7808C) was U/S. This voltage regulator provides 6 V to the rotator position pots. Q1 (25C2120, a NPN

transistor) and D2 (UZ-110, an 11 V Zener diode) were U/S. These combine to provide a regulated 10 V + Vcc for the op amps. Q3, Q4 (4558N dual op amps). Only one of the four op amps had normal voltages. The other three had an output voltage of about 9.5 V, including the two meter op amps (which explains the symptom mentioned above). In-circuit checks were made on all other semiconductors without finding fault.

"Repair: U/S semiconductors were replaced with same or equiv. parts and the controller was returned to normal operation. 73, Geoff VK4GWC".

AO-10 On the Move Again

OSCAR 10 is moving into the northern hemisphere again. By the time this goes to print its apogees will be occurring at around 11-12 degrees north latitude. The northerly excursion should continue until the end of 1998 when it will peak at about 27 degrees north before moving south again to cross into the southern hemisphere at the end of 1999, peaking again at about 27 degrees south latitude a year or so after that.

The moral to the story is that now is about the best time for those of us in southern Australia to make contact with European and North American stations. Don't wait too long or the mutual windows will become shorter as the cycle wears on. Reports indicate that many stations are still using AO-10 and, although conditions are variable, good contacts are there for the well equipped and patient operator.

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Over To You

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

How would this be achieved? Perhaps what is being suggested is to issue broken transceivers, and mark exam candidates on their ability to identify and fix faults?

What is not being appreciated in the argument for a practical test in the amateur exam is that without so-called "black box" operators, the hobby of amateur radio would likely cease to exist. At the end of the day, whether or not a radio amateur can or cannot build his or her own equipment, is irrelevant to the hobby.

A better action to stop amateur radio's perceived slide towards its ultimate demise, would be for radio amateurs to take themselves less seriously, and instead of moaning about the hobby, simply get on air and enjoy it.

David Douglass VK2DPD
4 Merino Road
Norville NSW 2263

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Practical Examinations

I was interested to read the comments of Neil Pickford VK1KNP in the OTY section of February's *Amateur Radio* magazine. His are not the first suggestions I have read on a more practical examination system, but I was intrigued at the suggestion for a fault finding component to the exam.

Hello Andy Thomas

Those who watched Channel 9 News in Adelaide on 25/1/98 were fortunate to see SA VHF Group Member and WIA Council Secretary, Graham Wiseman VK5EU, interviewed about Adelaide astronaut Andy Thomas and his proposed operation from MIR, complete with "mock" calling VK5MIR (Andy Thomas was still on board the Shuttle so operation would have been via W4SIR, etc). Great bit of publicity for us and Graham did us all proud. The interview showed professionalism from our side; after all, Graham has been involved with AMSAT and Apollo projects, and was thus a logical choice.

But there is more to it. The story has leaked from our amateur sources at NWS9 here, since confirmed by others, that Graham was the emergency fall-back location after the Channel 9 crew had travelled to another prominent amateur, ready and able to establish communications with the Shuttle/MIR on 145.985 MHz. Apparently the contact failed due to radio equipment failure on the ground. As there would only have been a couple of passes for the day, the Channel 9 news team had to go home without usable "tape in the can". In the end it came out OK, but how unfortunate that equipment failure meant no contact with W4SIR. ... **VK5KK.**

Since then, on 24/2/98 NWS9 ran another news item, this time featuring VK5 Divisional President, Ian VK5QX, via contact with Andy Thomas.

Also, a message from Rick VK6XLR at Exmouth said that on 24/2 at 2025 he made contact with Andy Thomas VK5MIR on 145.985 MHz. It was only a four minute contact but he considered it worth rising at 4 am VK6 local time to make the contact.

Report from the UK

Ted Collins G4UPS said January 1998 was one of the poorest he could remember, with only one major opening, on 12/1. Ted lists a few comparisons: 1998 – countries worked 6, total QSOs 48; 1997 – 21 and 131; 1996 – 17 and 114; 1995 – 24 and 193; 1994 – 11 and 76.

Lightning Strike

Early in February, Gordon VK2ZAB's station suffered severe damage from a lightning strike. A message from Gordon on 6/2 advised of his partial recovery from the damage. Two metres more or less OK; 70 cm QRP. 23 cm QRP. Phone line repaired. Repairs made to antenna change-over relays, pre-amps, power meter, antenna relay sequencer, FT-736 transceiver, computer. TV set still a bit sick. Video recorder replaced by

VHF/UHF

An Expanding World

Eric Jamieson VK5LP
PO Box 169, Meningie SA 5264
Fax: 08 8575 1777
Pocket: VK5LP@VK5W1ADL.ASA.AUS.OZ
E-mail: vk5lp@ozemail.com.au
All times are UTC

insurance. Main problem remaining in shack is solid state 23 cm PA which is shot.

The VK3XPD Report

Wally VK6KZ reports that Alan VK3XPD arrived there on Monday 2/2 from Esperance and left on 5/2 for Wally Green VK6WG at Albany:

"On 3/2 and 4/2 Alan went portable – first to the south and then to the north of Perth. We had QSOs on 3.5, 5.7 and 10 GHz over increasing distances from Kariak 45 km, Two Rocks 64 km and Lancelin 112 km. It was a most enjoyable experience to work from home and not be the portable station in the field. It was also good to give my 3.5 and 5.7 GHz gear a workout!"

"Whilst in Albany, before coming to Perth via Esperance, Alan assisted Wally Green VK6WG to modify an ancient Mullard TWT on 7 GHz to provide some power output on 5.7 GHz much to Wally's delight. Alan also went portable and had contacts on 5.7 and 10 GHz with VK6WG."

The Chances of TEP

Roger Harrison VK2ZRH said in a e-mail on 10/2 that he had been monitoring the IPS real-time ionospheric soundings and equivalent oblique ionograms at http://www.ips.gov.au/asf/aus_hf/ion_cat.html, and <http://www.ips.gov.au/asf/current/obliq.html>, respectively, and noticed the continuation of intense Es into this part of February during the afternoons. With the equinox five weeks away, this bodes well for the chances of TEP into NSW and Victoria via Es extensions.

The 3000 km MUF for paths centred on Darwin has regularly been in the 35-40 MHz region, indicating the F-layer north of Darwin, which supports afternoon-type TEP, might well be higher.

The University of Lethbridge ionospheric maps certainly show it to be so; (<ftp://solar.uleth.ca/pub/solar/www/realtime.gif>). The MUF as indicated at Darwin should begin creeping higher as the weeks go on and

the "southern equatorial bulge" in the ionosphere (which creates the conditions to support afternoon-type TEP) moves south with the approach of the equinox.

The University of Lethbridge has a propagation reporting/observation web site at <ftp://solar.uleth.ca/pub/solar/www/caros.html>. A little limited at present, but it's only young.

Six Metre Openings

Scott VK4JSR said that on 13/2 V73AT reported VK4DO at 0515, VK3XQ 5x7 0515, VK4BRG/b 0520, FK1KT 0603 5x5. JK7IKU worked VK7GUN at 0504 5x1.

From Bob ZL3TY: Six metres open 16/2 0453 JA5GJN/4 529, 0503 JA1WLO 529. Many weak JAs heard working VK4s.

Equatorial Guinea

I was surprised to receive an e-mail from Alan Isachsen 3C5I who will spend several years in Equatorial Guinea, Africa. He writes: *"It seems like a 100 years since we last talked! And you'll never recognise my present call of 3C5I (and KB2WF). I used to be VK5IR and VK5ZEI before 1980, when we tried to keep Geoff VK5TY and Bob VK5MM under control! I seem to remember you on the WIA committee and the newsletter we put out."*

"Geoff GJ4ICD and Neil G0JHC have been a great help and encouragement for me here on six metres. So far, I have two countries, 9H1 and I in the several weeks of band openings."

"I left Adelaide in 1980 for the US and got the KB2WF call in NY before going to TX for 3 years, then to Saudi Arabia for 5 years, back to NJ for one year, then VA for 3 years, Dallas for 5 years, now 3C5 for a few years to see me out the door to retirement. I'm 55 now."

"I have not been very active during this period except in VA and then here again. My favourite band is six metres but I occasionally go to 10 and 12 metres. Although restricted in antenna space, I am determined to make the best of it on six metres in the couple of years here when the solar flux will make it interesting."

Well, that's one of the rewards for writing these notes – one never knows who will suddenly write and tell of their experiences. I remember Alan well from the mid-1970s.

Propagation by TEP

John VK4FNQ said six metres in North Queensland has been quiet. A surprise was the TEP opening to Japan on 20/2, when between 0542 and 0603 the following were worked: JG2VUQ, JA1ETO, JZ1VP, JA1CPZ, JE1BMJ, JA7MA, JH1WHS, JE1WZF/m, JA7AMK, JA0LTH and JA8CRB/p7. John says he regularly monitors 50.110, 50.200 and 144.100 MHz.

John VK4KK in Brisbane also said that occasional openings were occurring to Japan, with a reasonable one on 26/2 from 0330 to 0400, working all districts except JA8. Another on 1/3 from 0300 to 0430 with JAs working to VK7 and VK8. V73AT was very strong. AH8 is also active. FK was heard on backscatter.

From **Scott VK4JSR**: *"The TEP opening on 50 MHz to JA on 22/2 lasted for more than three hours, with all JA call areas worked (except southern islands, eg: JD). Most signals above S9... just like the old days! The opening was in a typical TEP North/South path, and I heard little outside of that (except 49.750 MHz TV video). The 9M0C expedition was on 50.102 CW working JAs, but no backscatter into VK4."*

Solomon Islands

John VK4KK advised me that H44 would be activated in March. I asked **Rod VK4JSR** to refer my query to **Trevor VK4FL**, the proposed operator. Trevor replied that he would activate H44 on six metres for the period 27 to 29 March 1998 inclusive, using 100 watts to a four or five element beam. This visit is seen as a reconnaissance trip in preparation for a two week operation in March/April 1999. Other operators will be VK4BKM and VK4FI. Callsign is under negotiation but will be H44... or ZL1AL/H44.

Many people missed H44 (Solomon Islands) during the last cycle. The area is within Es distance of VK and UK/EU stations will be hoping that F2 comes to light in 1999 to provide them with a new country. I hope to report on the weekend in next month's notes.

Correction

Emil Pocock W3EP advises that there is a small but significant correction to his account of the F2 opening between the US and Australia and New Zealand on 1 January. Because this was the first true F2 of Cycle 23 for US stations, it should be clarified a bit.

"ZL2TPY did work W4DR. ZL2TPY had been hearing W4DR for some time in a pileup as loud as 5x9, but could not attract his attention. TPY then called W6BYA on the telephone to alert him about what was going on and to see if a phone message could be sent to W4DR. W6BYA did this. W4DR then moved off the pileup and easily worked ZL2TPY. All this was on SSB. Then ZL2TPY worked K6QXY and other stations. Thanks ... Emil."

Mid-Winter Contest

Rod VK4KZR recently suggested a mid-winter field day. Would you like to participate? Chas VK3BRZ says that he can be counted as a starter, also other Geelong

Amateur Radio Club members VK3TU, VK3XLD, VK3ASQ, VK3DQW, VK3KTD and VK3ZPO. It was discussed at a recent Club meeting, with the outcome suggesting a one-day event in winter, possibly on a Sunday.

I see nothing wrong with the idea. Operators may need to run the gauntlet of the weather, but what's new about that for field day operations? I tend to doubt whether too many operators would take equipment for 50 MHz to 10 GHz inclusive for a one day event. In the hope that more may participate, would it be worthwhile limiting the event to operating on 50, 144 and 432 MHz, plus perhaps 1296 MHz? Or simply 144 and 432 MHz?

Your thoughts to me. Do we ask the Federal Contest Co-ordinator to consider such an event, or is another person prepared to act as the co-ordinator? For winter this year time is running out. I will seek further responses by posting the idea on the VK-VHF Reflector.

Coloured QRA Density Maps

From **Chris G3WOS**: Joe N3AT and Michael NV3Z have a terrific web site for automatically creating azimuth projections. They have taken the QRA database created by Max DL4MDQ (max.wild@t-online.de) and plotted them on an azimuth graph. They are terrific.

Guess which grid square has the highest density of six metre hams. Go to: <http://www.uksmg.org/qramaps.htm> and take a look.

Two Metres and Above

Over the period 21 to 24 February, enhanced conditions occurred across The Great Australian Bight, resulting in a number of interesting contacts from VK6 to VK5 and VK3. Wally Howse VK6KZ gave me an overview of proceedings as follows:

"At 2140 UTC on Saturday 21/2 the 144 MHz VK5VF beacon was heard and this disappeared into the noise at 2200. However, at 2335 I worked Phil VK5AKK, later Roger VK5NY on 144 MHz. Cec VK6AO worked VK5AKK on both 144 and 432 MHz; at about 2340. VK5NY worked on 144 at 0032 Sunday 22/2 and Col VK5RO was heard but not worked (Col using 8 watts). Alan VK6ZWZ worked VK5NY on 144 MHz. Others active and working the VK5s were Bill VK6AS Esperance and VK6KDC Manimup."

"VK5VF was still audible at 0110 UTC Sunday 22/2. No signs of 432 or 1296 beacons from Adelaide nor of 144 beacons from Mt Gambier or Geelong."

"I first heard the Mt Gambier 144.550 MHz beacon at 2130 UTC 24/2, but there was

no sign of the Adelaide beacon."

"Col VK5DK in Mt Gambier was worked on 144 MHz by VK6KZ, Cec VK6AO, Don VK6HK, Ray VK6WU and Alan VK6ZWZ. Cec heard an identifiable whistle from Col on 432 but no QSO with him despite the then reception of the Mt Gambier 432.550 MHz beacon."

"Russell VK3ZQB was worked initially by Cec VK6AO on 144 MHz and later also by Don VK6HK, Wally VK6KZ and Alan VK6ZWZ. Russell was then worked on 432 MHz by all of these VK6s."

"Russell also heard Cec VK6AO on 1296 MHz but was not heard by Cec."

"Tests with Eric VK5LP and David VK5KK on 144 MHz were unsuccessful."

"Bill VK6AS from Esperance was successful on 144 MHz to Russell VK3ZQB during this and for quite a time after the signals in Perth were lost."

"Wally VK6WG in Albany was 5x9+ during our usual Perth/Albany sked at 2330 UTC. He reported at about 0000 UTC not hearing anything from Adelaide or Mt Gambier."

"Once again it appears we had the Perth to Mt Gambier path with no Adelaide and no Albany/anything - last observed in Feb 1996."

"The beacons on 144 and 432 at Mt Gambier probably disappeared at about 0100 as did the Esperance beacon on 144.568 MHz. The Esperance beacon is emerging as a very good indicator of the longer path - with two openings to VK5 from Perth it has been 599 - enhanced over its usual level for the 600 km path."

"Wally Green VK6WG heard Roger VK5NY's keyer on 1296 MHz for most of yesterday (23/2) and worked him about 1300. Wally was up late this morning after a very early start yesterday so didn't give a report on Albany conditions but Bill VK6AS worked David VK3AUU and Col VK5DK among others."

"One of the delightful by-products of the openings was the rekindling of interest by Reg Galle VK5QR. Reg dusted off his 1296 MHz gear and heard Wally Green on Monday morning (22/2)! I have been urging Reg to use 5.7 GHz again. It would be nice if those two oldies (both 87 this year in about August) could make it across the Bight like they did in the 'old days'!"

Wally adds: "Anyone wanting a phone call when beacons are heard in Perth please let me know and I will be happy to oblige. Provide phone number and any caveats regarding late or early hours of day."

On 22/2 around 2145, Max VK3TMP worked Adrian VK2FZJ4, via a meteor on 144.200. Max was looking for aircraft enhancement contacts when a long burn

occurred and he was called by Adrian. Initial reports were 5x1, then 5x5, then 5x8. A long burn but not long enough for the other eager listeners to make a QSO.

At 2155, Max broke in on a QSO between Des VK3CY, Barry VK3TBM/m and Ron VK3AFW to announce that Bill VK6AS and Roger VK5NY were coming through quite strongly on 144.150. Just after 2200 Ron VK3AFW and VK3II worked Bill. Bill peaked 5x9 at Ron's QTH before settling to 5x6.

Gordon VK2ZAB reports that two metre signals from VK5AKK and VK5NY were readable in Sydney at levels up to S6 from 2235 on 22/2 to 0038 on 23/2. Contacts made were: VK2BBF to VK5NY; VK2ZAB to VK5AKK and VK5NY.

He said: "As far as I am aware a 70 cm contact has never been made between Sydney and Adelaide area. This is still the case as, although signals from VK5AKK and VK5NY were heard up to 5x2 by VK2ZAB and traces of his signal were heard by the VK5s, no contact was made. This is entirely the fault of VK2ZAB who failed to allocate proper priorities to repairs to power amplifiers at his station."

Ron Cook VK3AFW said: "Some of the best contacts for a long time prevailed on 22/2 across Bass Strait. On 144 MHz at 2110, Andrew VK7XR was 20 dB over S9 into Melbourne. He reduced power to 1.5 watts and was still S9. He also worked Des VK3CY at Wedderburn on 144, signals about 5x2. Signals to and from Andrew VK7XR on 432.150 were S7 here at 2113, but nothing to Des."

"At around 2157 I worked Joe VK7JG in Launceston at 30 over S9. At 2146 I had worked Col VK5DK in Mt Gambier off the back of his beam. He and Russell VK3ZQB in Port Fairy then worked Bill VK6AS at Esperance, but nothing heard here. David VK3AUU also had a scratchy contact with Bill around 2204; by then just a trace of Bill here."

"The VK7RNE beacon was very strong. Mt Gambier beacon moderately strong, no others heard."

Recognising the good conditions on 22-23/2, **Barry VK3TBM** headed north towards NSW, operating mobile/portable. All contacts using an FT-290R Mk1 to 20 watt PA, into halo at 1/2 wave above car roof. He said: "I had a mestered day off, so I went for a drive to 'site survey' a hill for the John Moyle Field Day. The place is called half a dozen names - Mt Gwynne, Gwynne Hill, Mt Boomanoomana, etc and is located about 12 km NW of Mulwala in NSW. It is 250 metres above sea level, which puts it well above the surrounding countryside. Grid QF24we.

Table 1

Time	My location	Contact	RS	Distance
22/2:	2140 Heidelberg	Ron VK3AFW	5x9	
		Des VK3CY	5x2	200
		Max VK3TBM	5x9	55
	2210 Yan Yean	(5 km south of Whittlesea; 30 km N of Melbourne)		
		Rob VK3DEM	5x3	225
		Roger VK5NY	5x5-5x9+ 650	
	2300 Seymour	Roger VK5NY	5x1	650+
	2330 10 km south of Shepparton	Roger VK5NY	5x1	620
	2358 Shepparton	Phil VK5AKK	Adelaide, SA	
23/2:	0152 Mt Gwynne, NSW	QF24we, between Cobram and Mulwala		
		Rod VK2TWR	Nimmitabel, NSW	4x1-5x3 310
		Bob VK3AJN	Wangaratta, VIC	5x9 50+
		Len VK3BMY	Numurkah, VIC	5x9+ 48

"The good news is that the hill is ideal for my John Moyle endeavours. There is one single radio installation, which may be a two metre repeater, but it didn't cause me any problems noise-wise. If it is a repeater, local info suggests it isn't used much. It seems like my biggest problem may be finding a flat spot to throw down my swag!"

"I could hear all of VK5NY's attempts to work Gordon VK2ZAB on 70 cm, while I was travelling from Seymour to Strathmerton, VIC."

See Table 1 for Barry's mobile/portable contacts.

The Beacon Network

Reading the above reminds me of the continuing usefulness of the beacon network, with the recent most beneficial one being at Esperance in VK6, just in the right place to provide a form of indicator when east/west conditions have not allowed the Albany beacon to be heard.

I never cease to marvel at the reliability of the path between VK5LP at Meningie and VK3RGL/b at Geelong on 144.530 MHz, a daily 600 km path. I thought I would give it the acid test recently when the temperature here soared to 41 degrees. It was checked three times during that hot afternoon and it was always there, strength S1-2. Great stuff! It also serves to tell me that those useless galahs, who inhabit my antenna system each morning and evening, have not yet destroyed my feedline.

The new Mount Gambier 432 MHz beacon VK5RSE on 432.550 is also a daily occurrence, although at a lesser distance of around 270 km. I find the VK5VF 1296 MHz beacon a comfortable S5 and less prone to QSB than the one on 432 MHz, distance 110 km. Fascinating things, beacons.

Closure

Whilst six metres has been relatively quiet, the annual upsurge in higher bands activity

has been evident during February. This year, the absence of relatively slow moving or stationary high pressure systems in The Bight has not provided any sustained propagation enhancement, so 10 GHz contacts have not eventuated. But they will come again!

By the time you read this we will be in the middle of the autumn equinox, so be aware of possible F2 and TEP contacts. However, remember that if everyone is listening all the time no contacts will be made!

Closing with two thoughts for the month:

1. The Lord gave us two ends - one to sit on and the other to think with. Success depends on which one we use most, and

2. Experience is what you've got when you're too old to use it!

73 from The Voice by the Lake

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Who Will Get the Mandate?

As we reported in the March *Amateur Radio* VK2 Notes, this month is the time when you will find out who your representatives are for the next year on the NSW Council. The date set for the Annual General Meeting is 18 April 1998 at Amateur Radio House, Parramatta. It will commence at 1100 local. Elections for the VK2 Divisional Council are an annual event. They are a good indication of interest in the workings of the Institute, which is normally gauged by the number of people who bother to return their completed ballot papers.

Return of Ballot Papers

Completed ballot papers should be returned to the Parramatta office, using the reply paid envelope, to arrive no later than last post on Friday, 17 April 1998. They will then be counted and the returning officer will announce the results at the AGM on the following day. Please note that it is very important the instructions forwarded with the ballot papers and the proxy forms are strictly followed, otherwise your vote could be informal. The AGM starts at 1100 local on the Saturday at Amateur Radio House in Parramatta.

Trash and Treasure

The last Trash and Treasure should have happened at Dural in March, and should have been a repeat of the one at the end of November 1997 (weather and natural acts permitting). These events are usually well attended and have many bargains, plus a tour of the VK2 broadcast facility. Also at these events, the WIA VK2 Division bookstall goes along.

Responses so far this year have been quite good with the money for the hire of tables and from donated equipment and parts going to the WIA general fund. Organiser, Pat Leeper VK2JPA, told me to remind you that, despite the fact amateurs traditionally have short arms and long pockets, it's a good place to go along and socialise, meet your friends, have a chat and go away with a bargain.

Wyong Field Day

Speaking of sales, Pat also tells me that the combined efforts of the deceased estates and WIA bookstall at the Wyong Field Day this year grossed more than \$9,000. This was a very good effort, thanks to Michael Corbin VK2YC and his wife Cathy concerning the preparation and presentation of the deceased estates equipment. Thanks Michael for all the work you put in with the gear.

Other Councillors present on the Day included Eric Fossey VK2EFY, Eric Van De

WIA Divisions News

Weyer VK2KUR, Owen Holmwood VK2AEJ, Pat Leeper VK2JPA, Ken Westerman VK2AGW, Brian Kelly, VK2WBK and your faithful scribe David Thompson VK2NH. Other helpers were office stalwart Pixie Chapple VK2KPC and her husband Henry, as well as Bob Yorston VK2CAN. Nice to see Federal Director Peter Naish VK2BPN drop in to give a hand.

Affiliated Clubs News

Affiliated Clubs Officer Ken Westerman VK2AGW reports that the first Affiliated Clubs Conference for 1998 will be held at Amateur Radio House, Parramatta on Saturday, 16 May. If you wish to attend, agenda items and names of intended delegates are required at least two weeks prior to the conference. There will be lunch and dinner at a moderate cost (which will be advised). Coffee and tea, plus biscuits, will be provided. For further information contact the VK2 Divisional office. The conference will begin at 0900 local. Please arrive at least 15 minutes prior to this for registration.

Membership Renewals

Just a reminder that all VK2 WIA membership renewals are being processed through the Divisional Office at Parramatta. Anyone who has received a renewal notice, but has not yet responded, should forward the notice along with the fee to the VK2 Divisional office of the Wireless Institute at PO Box 1066, Parramatta NSW 2124. Do not send it to the Federal Office.

Correspondence Course

The VK2 Novice Correspondence Course is now available. For more information contact the Parramatta Office. It is a great way to achieve a positive result and gain your amateur radio callsign. There will shortly be a bridging course to take you to the AOCP (full-call).

More Information

For more information, contact the office or any of the Councillors. We will be only too pleased to hear from you. If you would like to get in touch with an individual Councillor,

just contact our Divisional office and it will be arranged. Our freecall phone number is 1 800 817 644 and our address can be found on the WIA Divisions' page. If you are addressing e-mail to the office, please do so at vk2wt@ozemail.com.au. There'll be more to report next month, but if you have anything you would like us to include as VK2 news, send it to me at PO Box 82, Springwood NSW 2777 or by e-mail to dthom@penrithcity.nsw.gov.au.

David Thompson VK2NH

VK3 Notes**AR Magazine**

The WIA monthly journal is in need of photographs. It relies on contributions from members of photographs for its front cover, and to accompany articles.

Why aren't we seeing photographs from white elephant days and Hamfests, the emerging ARDF group, ATV gang, WICEN Victoria, special event stations, JOTA, field days, packet radio, and plenty of other activities?

The answer is simple. Suitable photographs are not being submitted. The Publications Committee has personally enlisted my help and asked me to mention its plight in these VK3 Notes.

May I suggest to the officials of WIA Victoria affiliated clubs, and WICEN Victoria, that they consider having photographs taken of their events.

The old adage is that a picture is worth a thousand words. A photograph in *Amateur Radio* magazine, along with a few words, is a great way to boost the publicity efforts of any group. It also lets everyone know what is happening in our hobby.

Photographs of individuals "doing things" - receiving club awards or honours, constructing something, just being themselves, or at a public event involving amateur radio - the possibilities are endless.

I am hoping for a good response from VK3 so the Publications Committee can recover from the great photo drought (let's blame that too on the El Nino event) and overcome the "sea of grey" look on many of the pages of *Amateur Radio* magazine.

Disposals Transceivers

Proving to be extremely popular are the Philips FM92 transceivers, fully synthesised and scanning FM mobiles ideally suited for conversion to the two metre band, now available as a membership service at an affordable price.

Listening around the band you'll hear members already using these sets as their mobile or base station rig. Each comes with a

remote head which, in a vehicle, enables the transceiver unit to be mounted out of the way under a seat or in the boot.

The price varies from between \$20 to \$40. The transceivers are sold "as is" with no schematic or other technical documentation available. Country members can buy and reserve a transceiver and have it held according to pick-up instructions. The office cannot arrange freight.

Thank You Recruiters

A number of members have joined up new members in the past 12 months and your support is greatly appreciated. I was reminded of this activity earlier this year when listening on air and hearing a staunch WIA Victoria member ask his contact if he was a member.

The reply was he wanted to join. The member then offered to send him a membership application form, and the result is a new member. From past experience that would not be an isolated incident.

Thank you to those who are supporting WIA Victoria by recruiting new members by personal approaches to individual radio amateurs or making available to non-members the current membership application form.

Telling prospective radio amateurs or non-members about the Internet homepage www.tbsa.com.au/~wiavic is another successful way to help WIA Victoria in its recruitment efforts.

Postal Woes Update

The impact of changes (cost saving measures) in the postal service is now being felt by the WIA Victoria Office. As earlier reported, the mail delivery no longer comes from Ashburton but has been centralised at Burwood.

Mail deliveries previously arrived around 10 am each morning. Now, under the new system, we get mail at an undetermined time in the afternoon, often too late for it to be acknowledged on the day. Correspondence mailed in Caulfield recently took a week to arrive at the office.

WIA Victoria has taken pride over the past five years in promptly responding to the mail it receives. Could members please bear with us because, due to circumstances beyond our control, that level of service is now difficult to achieve.

Jim Linton VK3PC

VK5 and VK8 Notes

That Time of Year

Well, almost a year has gone by with the current Divisional Council in office. At this time of the year the VK5 Division holds its Annual General Meeting (AGM). One would

have hoped that an election of Council members would have been held; however, there were insufficient nominations received to require an election. It is natural that the question "WHY?" is asked regarding this. It may be that everyone is satisfied with the operation of the current Council or it may also be that apathy reigns supreme. I certainly hope that it is not the latter.

Irrespective of the above, there is still a great need for more work to be done in connection with the operations of the Division and it is also very necessary that the membership keep in communication with the Council by letting us know what your wishes are for your organisation. The message could be getting a bit worn now; however, it is still the same. I encourage you to pass on to us your ideas as to what you want done. We also want feedback from you as to how you think we are doing. Without any of this we are working to a large degree in the dark. Your Council does not pretend to "know it all" and is anxious to hear from you.

Work by the "Constitution Committee" towards production of an amended constitution is still progressing as are arrangements for a Clubs' Convention.

The AGM will be held at the Burley Griffin Building commencing at 7.30 pm on Tuesday, 28 April. I look forward to seeing a good attendance of members.

The Federal WIA

In the weeks prior to our own AGM, the WIA Federal Convention will have been held (late March). Suffice to say that I hope it brings many positive changes.

The VK5/VK8 Division is nominating a well known and capable member for the office of Director and is also nominating a person for the office of Federal President.

I have referred to concerns held by the VK5/VK8 Division about Federal WIA matters on the VK5W1 Sunday broadcast.

You may rest assured that the VK5/8 Division will do all in its power to bring about a satisfactory outcome at the 1998 WIA Federal Convention.

Andy and the Adelaide Symphony

The above line may have you wondering whether someone is becoming mixed up with extraneous activities or has perhaps lost the plot. However, here we have an interesting sidelight to retail.

I received a call from the Education co-ordinator of the Adelaide Symphony Orchestra (ASO) who placed before me an unusual request. He was aware of the fact that I was in contact with our own astronaut, Andy Thomas VK5MIR aboard the Space Station MIR.

The ASO is to perform at two concerts to be held at the Adelaide Festival Theatre. The theme for the concerts is "Space - the Final Frontier". The performance will comprise music ranging from the "Planets Suite" by Gustav Holst to theme music from "Star Wars", "2001- A Space Odyssey", "The Empire Strikes Back", "Star Trek", "Parade of the Ewoks" and the "Dr Who Theme". Also included in the program will be works by Australian composers, namely Peter Sculthorpe's "Sung Song" and Barry Conynghams's "To the Stars."

At the same time as the music is being performed the audience will be able to view, on a large video screen, pictures and animated graphics showing scenes of such items as planets, meteors, comets, nebulae, etc. Included are excellent photographs taken from the Siding Springs Observatory and a great deal of other material from differing sources.

The suggestion was made that it would be wonderful to have Andy Thomas appear as a special guest to address the audience. It so happens that Andy was made aware to some degree of this idea when he was in Adelaide during the Christmas/New Year period and was enthusiastic.

As a result of this I have been involved with making of arrangements through NASA channels to have a video segment produced with Andy VK5MIR addressing the audience from the MIR space-craft and telling them what it is like to be an astronaut and the feelings that he has on such matters. We are presently awaiting advice from Moscow that the video item has been produced on a television downlink to that area. I was not aware, and was interested to find out, that the Russian television system uses the PAL format. This allows the video to be produced without having to worry about conversion of the format from NTSC (does NTSC actually stand for "No Two Same Colours"?).

This has been an interesting project as it has meant being in touch with NASA authorities from the Johnson Space Centre in Houston Texas, Washington DC, the NASA Representative here in Australia, and to see the authorisation processes in operation for such arrangements.

It is also good to see such a suggestion as described above come to fruition. A certain "Marriage of the Arts and Science".

By the way, I hope that you liked the front cover picture of our very own Adelaide, Australia astronaut on the February issue of the magazine. One major historical fact that seems to have gone almost unnoticed in the media is that we have now had the first instance of the use of an Australian Radio Callsign from Space.

Over the past weeks there have been a number of broadcast radio and television segments, both local and national, dealing with Andy Thomas and amateur radio which have provided good publicity for our hobby. It is certainly hoped that such will continue.

Best regards to all.

Ian Hunt VK5QX

VK6 Notes

FM Field Day - Sept 1998

I almost fell off my chair when I actually received some INPUT! Alan VK6ZWZ has provided information on the WA VHF Group's FM Field Day, to be run from 1230 - 1630 WST on Sunday, 20 September 1998. Please mark this in your diary now. The primary aim is to encourage Limited Novice and Novice operators, hence the contest is limited to the frequencies and modes available to those licenses; 146 - 148 MHz and 433 - 435 and 438 - 440 MHz packet and phone, as well as packet-only between 144.692 - 145.208.

WA VHF Solstice Scramble - June 1998

This looks like fun! It only runs for 30 minutes, between 0900-0930 WST on Sunday, 21 June 1998, which is in the half-hour leading up to the WIA news broadcast.

The idea is to contact as many stations as possible, on as many bands as possible on 50 MHz and above. You'll need to get a copy of the rules from the VHF group, or I can fax them to you; fax your request to 08 9354 8826, or e-mail me for a soft-copy.

Conference of Clubs

The WIA WA Division convened this conference on Saturday, 28 February at CWA House in West Perth. There were 38 attendees, representing WAADCA (Digital Group), the ATV Group, Guides Association, NCRG (Northern Corridors), VHF Group, WARG (Repeater Group), Peel AR Group, RAOTC (Old Timers), SEG (Southern Electronics Group - UHF and surrounds), Busselton and ARSNW (North-West Group, informally), Hills ARG, WICEN, Scout Association, and a historical overview of the WIA in WA.

Some interesting points arising include:

1. 169 members responded to the recent WIA survey, showing the average age of respondents to be about 60 years. Only two members were under the age of 30, most listened to the weekly WIA news broadcast, and most were NOT on the Internet.

2. Methods of attracting new members to the WIA were discussed, including discounted 'introductory' memberships and similar schemes.

3. The possibility of the WIA negotiating a 'group discount' with an Internet Service Provider(s) was raised, with the dual benefit of lower access for WIA members, as well as a contribution back to the WIA from the ISP. This is preferable to the WIA attempting to set-up as an ISP itself.

After lunch, the gathering was addressed by Mr Jack Shelbourn, Manager of the Perth ACA Office. This was quite informative, providing valuable background information on ACA policy and corporate philosophy. Mr Shelbourn later answered questions from the floor, including amateur radio exams, radio monitoring policy, attitude towards amateur radio, and advice on how to seek amendments to the Australian band plans.

For the rest of the meeting, the biggest issue was "how to get more people into amateur radio", particularly younger people. It was argued that amateur radio in its present form simply fails to inspire, excite or attract school students, for whom modern commercial communications and the Internet have removed the mystique surrounding inter-continental communications.

Further, amateur radio has fallen behind the times and is currently running on old technology, technology that is dangerously close to being rendered obsolete as even basic 'Private Mobile Radio' moves into an era of digital transmissions rather than analogue (eg TETRA and APCO-25 DMR). The skills developed in amateur radio are certainly not leading edge, and hence are not perceived as providing an edge in the search for employment. Young men and women can do better by investing their spare time in other technical pursuits.

I proposed that a new grade of license be introduced, which is totally exam-free. This license would be digital only (no voice), and limited to 70 cm and up. The targeted group would be school children studying computing and/or electronics, typically aged 14 to 17.

There was some support for the idea and it was passed as an action point for investigation by Council. What do you think? Before you make up your mind, what is the age of the youngest amateur you personally know? Also, given that anyone can have access to some amateur bands (shared with ISM services) using spread-spectrum devices, would you rather that access occurred as part of amateur radio (strengthening amateur radio's position), or outside of amateur radio (weakening the position)?

Other issues covered included the need for a WIA lobbyist in Canberra, rather than relying on volunteers, the need to truly deregulate amateur radio rather than change

the regulations, and the need for primary band allocations between 144 MHz and 24 GHz. There was also a proposal that the WIA establish a building at Whiteman Park, north east of Perth.

Finally, there was consensus that the conference was worthwhile, and it was hoped that there may be two conferences run each year, one in the country and one in Perth. Wally VK6KZ extended special thanks to Christine VK6ZLZ for her efforts with the administrative arrangements for the Conference.

Did You Know?

Did you know that the entry-level ("4th Class") amateur license in Japan does not require any Morse examination? Maximum output power is 20 W, and operators are allowed all bands and all modes except CW.

Chris VK6BIK will be writing this column next month. Chris' contact details are chrismor@avon.net.au, PO Box 838, Toodyay WA 6566, or 08 9574 4060.

Chris Hill VK6KCH

"QRM" News from the Tasmanian Division

The Divisional Annual General Meeting for 1998 has been held and a report on this will be in the next issue of this column. The Division is grateful to Marcomm-Watson for donating an Icom T8 tri-band handheld transceiver, which was the door prize for the dinner. Some lucky ham is very fortunate. Other prizes were donated by Dick Smith Electronics, Active Electronics and the Launceston Tandy outlet.

12 candidates offered themselves for election. There will be new faces on Council as the following stepped down this year: Mike Jenner VK7FB, Barry Hill VK7BE, John Rogers VK7JK and Robin Harwood VK7RH. We thank the retiring councillors for their input on Divisional Council and hope that they will continue to be involved in the future activities of the WIA.

Branch elections were held in February and, in two Branches, there were changes. In the Southern Branch, Andrew Dixon stepped down as Branch President after quite a long stint. Mike Jenner VK7FB was elected to fill the vacancy. Graeme Scobie VK7ZAP is vice-president, John Bates VK7RT continues as secretary and Harvey Lennon VK7KSM as treasurer. Gary Duence VK7JGD is Southern WICEN co-ordinator.

In the Northern Branch, Geoff Wells VK7ZOO stepped down as president and Allen Burke VK7AN was elected. Geoff is vice-president. Secretary is Phil Corby VK7ZAX with Tim Holloway VK7TIM being re-elected as treasurer. Barry Hill continues as Branch WICEN officer.

I do not have any information on the North-western branch elections.

The Domain Activity Centre continues to be a focus for amateurs in the south of the State. Up to a dozen are there every Wednesday afternoon between noon and 4 pm. I briefly called in just prior to the rooms being closed and was pleased to see John VK7JK, who has not been in the best of health.

We were all pleased to hear his cheery voice back on VK7WI on Sunday mornings.

Last month, the North and North-western

branches held a combined meeting at Deloraine at the usual venue. This time, Max VK7KY gave a talk on woodcarving and taxidermy. I believe that VK7ZTI was going to take along a Tesla coil - that should have seen sparks go everywhere.

This month, the branches will meet as follows: the Southern Branch on Wednesday, 1 April at 2000 hours at the Domain Activity Centre; the Northern Branch on Wednesday, 8 April at 1930 hours at the Alanvale campus of TAFE (please listen to VK7WI for exact room numbers and buildings as these may

change); and finally the North-western branch will meet on Tuesday, 14 April at the Penguin High School on Dial Road at 1945 hours. Please come along and support your Branch.

In conclusion, I would like to thank the Divisional Council and Branch officials for their co-operation in compiling this monthly column, from which I am stepping down. Thank you and 73.

Robin L Harwood VK7RH

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Club News

Summerland Amateur Radio Club

At the Annual General Meeting of the SARC, held on 15 February 1998, the following office-bearers were elected for the ensuing year: President, Ken Hore VK2HE; Vice-President, Andrew Cook VK2KKP; Secretary, Bert Suesskow VK2HIV; Treasurer, Peter Walden VK2LED; Publicity Officer, Graeme Virtue VK2GJ; Committee Members: Alan Foster VK2KEE and Carl Jansen VK2XLT.

A motion to change the name of our Club was discussed, at length, and lost.

It was agreed to present Certificates of Appreciation to all those in the Club with more than twenty-five years membership (about 16 in all).

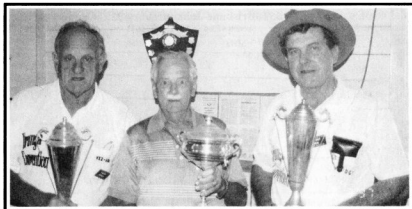
To encourage budding amateurs, it was decided to grant one year's membership to all who pass the Amateur Radio examinations at the club-rooms, and obtain their Amateur Transmitting Licence.

The Club's Web Site is <http://www.nor.com.au/community/sarc/sar.html>

Graeme VK2GJ
Publicity Officer

The 50th Urunga Radio Convention

The 50th Urunga Radio Convention will be held at Urunga over the Easter weekend of 11-12 April 1998. Some of the amateurs who have held the position of President/Organiser over the years are Crieff Retallick VK2XO,



VK2ADA, VK2PA (now SK) and VK2DGT at the 1997 Urunga Radio Convention holding trophy cups used in past conventions.

Rod Pike VK2ACU, Ted Gabriel VK4YG, Fred Corruthers VK2PF, Ray Chaplin VK2SB, and Noel Hanson VK2AHH and his assistant Norm Dash.

The equipment used in the early days of the convention was all home spun. Now none of the sophisticated transceivers used to compete are home made, which is more the

pity as it takes the amateur out of amateur radio.

We hope to see as many of the amateurs who have been to Urunga previously at the 50th Convention, and as many as possible who have not been to Urunga before, make the 50th Convention their first.

B J Slarke VK2ZCQ

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WIA MORSE PRACTICE TRANSMISSIONS

VK2BWI	Nightly at 2000 local on 3550 kHz
VK2RCW	Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm
VK3COD	Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz
VK3RCW	Continuous on 145.650 MHz, 5 wpm, 10 wpm
VK4WIT	Monday at 0930 UTC on 3535 kHz
VK4WCH	Wednesday at 1000 UTC on 3535 kHz
VK4AV	Thursday at 0930 UTC on 3535 kHz
VK4WIS	Sunday at 0930 UTC on 3535 kHz
VK5AWI	Nightly at 2030 local on 3550 kHz
VK5VF	Continuous on 145.650 MHz, 5 wpm to 12 wpm
VK6RCW	Continuous on 147.375 MHz, 3 wpm to 12 wpm
VK6WIA	Monday to Thursday at 2000 local on 3.555 MHz and Tuesday at 2000 local on 146.700 MHz

HF Predictions

Evan Jarman VK3ANI

T Index: 62



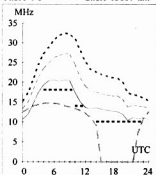
These graphs show the predicted diurnal variation in key frequencies for the nominated circuits. They also nominate the best amateur band for communication.

- The frequencies, identified in the legend, are:-
- Upper Decile (F-layer)
 - F-layer Maximum Usable Frequency
 - E-layer Maximum Usable Frequency
 - Optimum Working Frequency (F-layer)
 - Absorption Limiting Frequency

The predictions were made with the Ionospheric Prediction Service program, ASAPS V3.2. The T index used is shown above the legend. The Australian terminal azimuth, path and propagation mode are also given for each circuit.

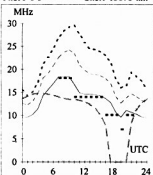
Adelaide-Moscow 318

First F 0-5 Short 13807 km



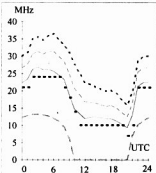
Brisbane-Berlin 321

First F 0-5 Short 15678 km



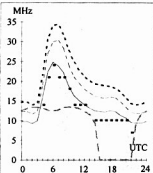
Adelaide-Osaka 357

Second 3F5-9 3E0 Short 7746 km



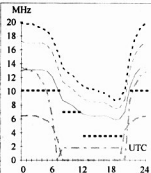
Brisbane-Johannesburg 229

Second 4F3-4 4E0 Short 11633 km



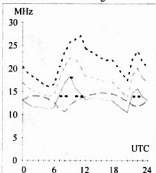
Canberra-Auckland 102

Second 2F20-23 2E6 Short 2300 km



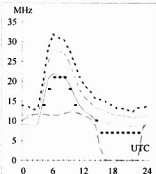
Darwin-London 145

First F 0-5 Long 26170 km



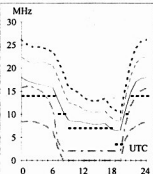
Adelaide-Pretoria 238

Second 4F5-6 4E0 Short 10065 km



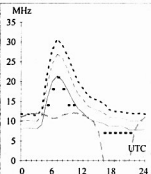
Brisbane-Noumea 70

First 1F15-17 1E3 Short 1471 km



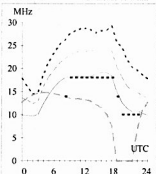
Canberra-Capetown 219

Second 4F4-5 4E0 Short 10778 km



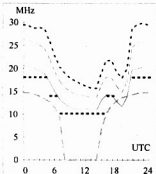
Darwin-London 325

First F 0-5 Short 13854 km



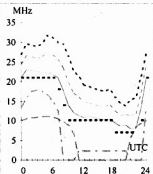
Adelaide-Seattle 51

First F 0-5 Short 13413 km



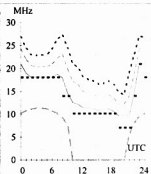
Brisbane-Singapore 293

Second 3F9-13 3E0 Short 6147 km



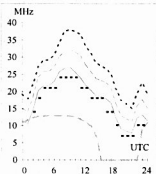
Canberra-Manila 327

Second 3F8-13 3E0 Short 6286 km



Darwin-Riyadh 295

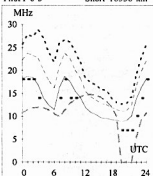
Second 4F5-11 4E0 Short 10001 km



Hobart-Dakar

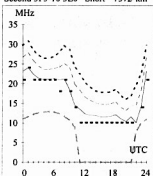
209

First F 0-5 Short 16556 km

**Melbourne-Bangkok**

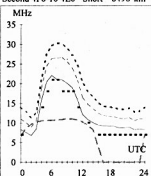
312

Second 3F5-10 3E0 Short 7372 km

**Perth-Harare**

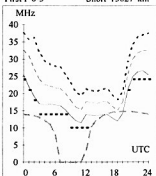
257

Second 4F8-10 4E0 Short 8496 km

**Sydney-Miami**

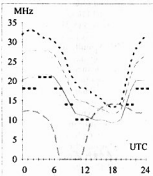
86

First F 0-5 Short 15027 km

**Hobart-Lima**

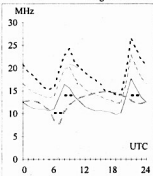
133

First F 0-5 Short 12420 km

**Melbourne-London**

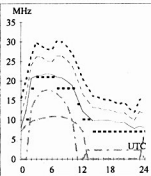
131

First F 0-5 Long 23118 km

**Perth-Maldives**

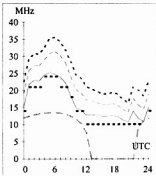
303

Second 3F9-13 3E0 Short 5979 km

**Sydney-New Delhi**

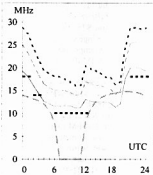
302

Second 4F4-9 4E0 Short 10419 km

**Hobart-New York**

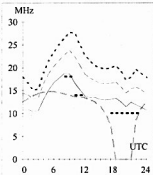
80

First F 0-5 Short 16610 km

**Melbourne-London**

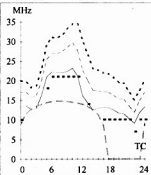
311

First F 0-5 Short 16906 km

**Perth-Rome**

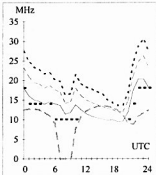
303

First F 0-5 Short 13339 km

**Sydney-Rio de Janeiro**

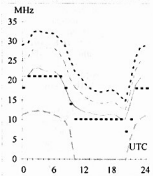
164

First F 0-5 Short 13519 km

**Hobart-Seoul**

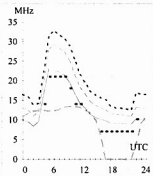
344

Second 4F7-11 4E0 Short 9176 km

**Melbourne-Lusaka**

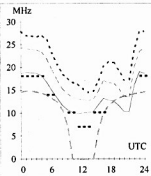
241

Second 4F3-5 3E0 Short 11152 km

**Perth-Vancouver**

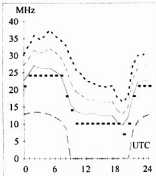
50

First F 0-5 Short 14824 km

**Sydney-Tokyo**

350

Second 3F4-9 3E0 Short 7825 km



HAMADS

- Hamads may be submitted on the form on the reverse side of the *Amateur Radio* address flysheet. Please use your latest flysheet where possible.
- Please submit separate forms for **For Sale** and **Wanted** items, and be sure to include your name, address and telephone number (including STD code) if you do not use the form on the back of the *Amateur Radio* address flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment offered for sale should be included in the Hamad.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at \$25.00 for four lines (twenty words), plus \$2.25 per line (or part thereof), with a minimum charge of \$25.00. Cheques are to be made out to: WIA Hamads.
- Copy should be typed or in block letters, and be received by the deadlines shown on page 1 of each issue of *Amateur Radio*, at:
 Postal: 3 Tamar Court, Mentone VIC 3194
 Fax: (03) 9584 8928
 E-mail: vk3br@c031.aone.net.au

TRADE ADS

• **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Assoc TV Service, Hobart; Truscott Electronic World, Melbourne and Mildura; Alpha Tango Products, Perth; Haven Electronics, Nowra; and WIA Equipment Supplies, Adelaide.

• **WEATHER FAX programs for IBM XT/ATs:** *** "RADFAX2" \$35.00, is a high resolution short-wave weather fax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" \$45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT" \$75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3.00 postage. ONLY from M Delahunt, 42 Villiers St, New Farm QLD 4005. Ph 07 358 2785.

• **HAM LOG v3.1** - Acclaimed internationally as the best IBM logging program. Review samples....AR: "Recommend it to anyone".

The Canadian Amateur: "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology". ARA: "Brilliant". Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just \$59 (+\$5 P & P), with a 90 page manual. Special 5 hour Internet offer. Demos, brochures available. Robin Gandevia VK2VN, 02 369 2008 BH, fax 02 369 3069. Internet address rhg@ozemail.com.au.

FOR SALE NSW

• **Yaesu FT-726R** 2 m/70 cm satellite txcvr, \$1000. Cushcraft 13B2 antenna, 144 - 148 MHz, 100 feet

9913 coax, \$250. All VGC. Boy VK2DTH, QTHR, 0763153.

• **FM-900s remote heads**, 2 m, tuned and programmed, complete units, choose the programme for north or south of the Hawkesbury River, most repeaters, all packet and main simplex channels, 2 scan groups, \$120 delivered, receipts given. Frank VK2XVJ, 02 4933 3760 4-8 pm ESDST.

• **Icom IC-502** 6 m portable SSB txcvr, recently serviced, manuals, mic, \$150. Omega antenna noise bridge, original box, GWO, \$50. Valves - commercial, military and consumer, send A4 SASE for list. Brian VK2GCE, QTHR, 02 9545 2650.

• **Yaesu FT-747GX** HF txcvr, with Yaesu MD-1 Desk Microphone, mobile bracket, FM Board, Manuals, in original carton, good radio, good condn, \$800.00. Ono, Aaron VK2ON, QTHR, 024933 5972 AH, 02 4964 6953 BH, 0413 778 234.

• **Kenwood TS-430S** HF txcvr, both manuals, DC power cable, overhauled by Kenwood, \$760. John VK2FUR, 02 4625 1812.

• **Yaesu FT-101** txcvr, needs alignment, s/n 83C-131697, \$180. P W Campbell VK2AXJ, QTHR, 02 4454 0727.

FOR SALE VIC

• **FT-3000M** 70 W 2 m mobile txcvr, mic, handbook, power cable, EC, \$400. **FT-2400** 50 W 2 m mobile txcvr, mic, handbook, power cable, EC, \$300. J N Cassidy VK3VD, 18 Robertson Cres, Laverton VIC 3028, 03 9369 2042.

• **Southern Cross free-standing 80 ft tower**, with safety ladders, cages, topped with crow's nest, working platform. Bill VK3WK, QTHR, 03 5561 1376.

• **Ameritron AL811** 600 W linear amplifier, s/n AL8113539X, as new, only used once, \$900, reason for sale is it is too heavy for an invalid to handle. Tony VK3ALA, QTHR, 03 5728 6624.

• **Estate Ray Fowler VK3BHL:** Universal HC500 antenna coupler, \$70. Home-brew frequency

counter, \$25. Ham power/SWR meter, \$25. Daiwa C165 antenna coupler, \$25. Home-brew 20 A regulated PSU, \$150. Yaesu FT-101B, mic, cables, no handbook, \$400. CB 2 A PSU, \$25. Kenwood TR-7800 2 m FM txcvr, \$250. Lodestar SWR3d power/SWR meter, \$25. Panther 13.8 V 2 A PSU, \$20. Kenwood HC10 world clock, \$50. Yaesu FF50 DX 52 ohm filter, \$25. Microwave Modules 144 MHz bandpass filter, \$25. 6 position co-ax switch, \$15. Antenna changeover switch, \$5. Leader signal generator, \$50. Home-brew metered PSU, \$65. Home-brew metered PSU, \$45. Home-brew metered PSU, \$15. Model 110 power meter, \$15. Qcraft field strength meter, \$15. HB power meter, \$5. HB power supply dummy load, \$20. Microna multimeter, \$10. DSE 1 A, multi-voltage PSU, \$10. 3 multimeters various makes and condn, \$20 the lot. Shure low impedance mic (new) \$10. FT7 13.8 V PSU, \$10. AM/FM stereo tuner, \$20. Kenwood SWR/power meter, \$50. Palomar Engineers RF transformer, \$50. Low-pass filter, \$20. Mura PRX100 mic, \$25. Antenna coupler roller inductor, \$45. Microna multimeter, \$25. Eddystone GDO in wooden box, \$75. Southern Star PSU, \$5. 2 transistor checkers, \$10 each. 3APC transceiver, \$50. 18 ft length 3 inch square oregon, \$50. Sharp EL22 multimeter, \$20. FT200 PSU, \$100. TE50 junior model tube tester, \$20. DSE masthead amplifier, \$5. Seiki HA23C CB rig, \$35. AC line filter, \$5. Kenwood TS-820, appearance OK but not working, handbook, workshop manual, \$100. Ono, Ken VK3AFJ, QTHR, 03 9752 2086.

• **2 MHz HF marine radio**, \$250. Ono: or swap for 3.5 MHz set. Microna 7 range volt/ammeter (tong meter), measures up to 300 amps 600 volts, new, still boxed, \$50. J L Tobias VK3MMD, QTHR, 03 5975 2746.

• **Test equipment:** Fluke 8600A digital multimeter, \$130. Fluke 8810A DMM, \$140. HP 606A signal generator, \$85. HP 5382A 50 kHz - 65 MHz frequency counter, \$150. Racial-Dana 9008M 225 MHz modulation meter, AM/FM to 1 GHz, \$300. Marconi TF2300 modulation meter AM/FM to 1 GHz, \$350. Telewawe 44A wattmeter, 20 to 1000 MHz, \$130. Racial I7L communication receiver, \$400. Peter VK3IZ, QTHR, 03 5156 2053, jupiter@net-tech.com.au

• **Icom IC-471H** 13.8 VDC all mode 70 m txcvr, VGC unmodified, s/n 03154, \$1100. AG35 masthead pre-amp, \$200. The pair, \$1200. Des VK3CY, QTHR, 03 5494 3156 anytime.

• **TS-430S**, STHR, FT-101B, \$190. 10 MHz CRO, \$150. AWA-F242 Dist/Anal, \$800. FT-101ZD ext VFO, \$100. Marconi Radio Tester M1 2960B system c/w amps, tacs, MPT 1327 adapter, as new, \$12,500. Ono, JRC-NJ2900 analogue phone tester, \$1800. Ono, Cushcraft A3S HF 3 el tri-band Yagi, \$500. Motorola HT antenna 136-151 MHz, suit HT600, GP200, etc, \$30 each. Signal Generator/Control, 1 Hz res, 50 kHz to 80 MHz, \$450. Ono, Lee VK3GK, 03 9544 7368, 015810101.

• **MFJ198** 80-2 m vertical antenna, brand new, never used, \$300. Howard L30951, 03 9408 7597.

• **KLM KT344** 4 el tri-band beam, only 3 years old, \$500. Buternut HF6V-Six band vertical antenna, 5

years old, in excellent condn, \$200. Icom IC-751 HF txcvr, mike, handbook, accessories, good condn, \$750 ONO. Harold VK3AFQ, QTHR, 03 9596 2414 anytime, e-mail hepb@alphalink.com.au.

•Kenwood PSU, s/n 5070229, manual, very little use, excellent condn, \$280. Icom IC-721 HF txcvr, AM/FM/SSB, s/n 01729, can be used with above PSU, good condn, \$750; or both as package, \$950. Fred VK3HFH, QTHR, 03 5360 8284.

•**12m 23 cm linear amplifier**, 1 watt in 10 watts out, 12 V supply at 5 A, auto-switching with manual, \$150. **Mirage 70 cm pre-amp**, auto switching, 20 dB gain, \$100. **MJ989C** 3 kW deluxe roller inductor antenna tuner, cross needle SWR/Watt meter, provision for wire antenna, and multiple coaxial antennas, 300 W dummy load, original packaging, manual, \$550. **Timewave DSP 9** audio noise reduction filter, 12 V, Random and Tone noise reduction, CW filters down to 100 Hz, complete with original packaging and manual, \$200. **Kantronics KPC9612** 1200/9600 Packet Modem (V5.2) with original packaging, software and manual, \$350. **NALLY galvanised 8 metre tower**, lower section 4.3 m 80 mm square tubing, smaller section inside approx 8 m, winch attached to base extends tower to full height, base section mounted against wall with hinge bracket to allow easy erection to a vertical position by one person, mast locks into a second bracket (supplied) on the wall, dismantled and ready for collection in Hartwell, \$200. Chris VK3KCP, 03 9629 2653.

•**Yaesu FT-101ZD**, matching ext spkr, 600 Hz CW filter, spare 12BY7A driver and 6146B valves, DC power cable, manual, rig works OK, one owner. H V Lonsdale VK3DND, 03 5153 0717.

FOR SALE QLD

•Kenwood TS-520S txcvr, s/n 830738, \$300. DG5 matching digital display, s/n 720321, \$100. \$400 the lot, including four spare 6146s. Has been overhauled recently. Charlie VK4BQ, QTHR, 07 4779 4301.

•Two metre station: **Kenwood TR-751A** all mode txcvr, 25 W, **Mirage B-2516C** 160 W amplifier, fully remote controllable, both units in mint condn with all accessories and manuals, \$1200 shipped insured anywhere in VK. John VK4KK, QTHR, 07 3269 6647.

FOR SALE SA

•**Icom IC-706** mobile all-mode txcvr, HF + 6 m + 2 m, immaculate condn, in original carton, s/n 01547, \$1500 ONO. John VK5KBE, QTHR, 08 250 7259.

•**Drake TR7 txcvr**, PS7 PSU, RV7 usual second VFO, RV7S synthesised second VFO, SP7S speech processor, P7S phone patch, MS7 speaker with built-in amplifiers for SSB and CW, \$1875. Harro VK5HK, 08 8323 9622, e-mail arv@terra.net.au.

FOR SALE WA

•**Icom IC-R9000** communications receiver, s/n 02674, SP-20 external spkr with audio filters, s/n 005747, as new, original packing, accessories and manuals, seldom used, fabulous opportunity to own this famous receiver, reluctant sale, cost \$8400, will sell for \$4000 ONO. Ron L60326, 0419 934 047.

•**Kenwood TS-50 HF** txcvr, s/n 50301468, as new condn, never used mobile, mobile bracket, manual, \$1000. **Yaesu FT-102** HF txcvr, s/n 21040720, VGC, \$450. John VK6NU, QTHR, 08 9446 1345, 0412 911 230.

FOR SALE TAS

•**Yaesu FRG7** receiver, s/n 7H092971, VGC, instruction book, speaker, \$150. A J Cope VK3CA, QTHR, 03 6227 9292.

•**Kenwood AT-250** auto ATU, mint condn, suit TS-130S, TS-430S, TS-140, TS-680s. 2 m mobile txcvr, 1-10 W, 16 channels xtal locked, good condn, \$150.

MJ948 Morse keyboard and display, 32 K mem, keyboard near new, \$230. **Compakratt serial converter and cartridge software** suit C64 and C128, connects to PC232. Allen VK7AN, 03 6327 1171.

WANTED NSW

•**Yaesu FL-2100B** amplifier, dead or alive, preferably dead. Realistic DX-150A 4 band general coverage receiver. **Yaesu world clock. Ampex 100 series, reel-to-reel tape recorder.** Ray VK2FW, QTHR, 063 653 410.

•**ARB** receiver, tuning head, controllers, interconnecting cables and Bowden tuning cable, is the whole nine yards! Swap, or good money for collector condition. Brian VK2GCE, QTHR, 02 9545 2650.

•**Kenwood-Trio DM801** dip meter. Also Bird Wattmeter. Ken VK2KJ, 02 9413 1846, 0412 003 517.

WANTED VIC

•**ATU, Emtron 300A or similar**, pay top price for clean unit. Max VK3GMM, QTHR, 03 5985 2671.

•**Kenwood TS-120V**, not working, wanted for spare parts. Len VK3LEN, QTHR, 03 5356 2368.

•**AR7** communications receiver. Howard L30951, 03 9408 7597.

•**AT-50 ATU** for TS-50S, can't afford much on pensioner income, appreciate if can help. Graeme VK3FIR, Margot Street, Ferntree Gully VIC 3156.

Silent Keys

Due to space demands obituaries may be no longer than 200 words.

The WIA regrets to announce the recent passing of:

B L (Bruce) Mc Cubbin VK3SO.

Fredrick John Lubach VK4RF

It is with deep regret that we record the passing of another OOT'er, VK4RF. After a long illness, Fred became a silent key on Friday, 13 February at the age of 78.

Fred obtained his licence and joined the WIAQ in 1936. Known as Mr DX, he actively pursued this interest for 62 years, interrupted only by WWII. As a teenager he worked DXCC in almost as many days using a 25 watt home brew rig and wire antenna; a national feat that, for the period, was never surpassed.

VK4RF enlisted in Brisbane in the Naval Reserve on the same day that Robert Menzies announced that Australia was at war. His Morse ability was such that he was immediately posted south to the Naval Training School in Melbourne. At the

•**Swap Motorola UHF Syntrix ATT**WBA**G00AK** with CTCSS for the equivalent VHF high band type. Ian VK3AYK, 0418 309 050.

•**Drop-in charger to suit Yaesu FT-207R**, working unit preferred but dead one considered. Don VK3DBB, QTHR, 03 5941 1351 AH only.

WANTED QLD

•**Solid state low band two way radio**, 50 W, BLY90 transistor. John VK4TL, 07 4096 8328.

WANTED SA

•**Icom IC-22S** txcvr, not working. Keith VK5OQ, 08 8280 7430.

•**Case for D104 microphone**, or American Electronics copy. Ivan VK5QV, QTHR, 08 8725 5514.

MISCELLANEOUS

•**The WIA QSL Collection** (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose VIC 3765, tel 03 9728 5350.

•If you got your licence before 1973 you are invited to join the **Radio Amateurs Old Timers Club**. A \$2.50 joining fee plus \$5.00 per year gets you two interesting Journals plus good fellowship. Arthur Evans VK3VQ or Milton Crompton VK3MN can supply applications forms. Both are QTHR in any Call Book.

completion of that short course he, with three others, radio gear and sufficient supplies to set up a long term camp, set sail to a coastal destination not far south of Cape York. Here they remained throughout the war, radio spying and recording everything they could hear.

Post war Fred joined the ABC/PMG staff as a Broadcast Technician in the Brisbane Stations, later moving to 4QS Dalby and finally to the Frequency Measuring Station at Capalaba, retiring in 1977.

His service to the WIAQ was long and varied. After a period as one of the Institute's Morse instructors, he discharged several duties as a Councillor. He stood twice in the QSL Bureau with well regarded efficiency and provided the weekly WIAQ news broadcasts with up-to-the-minute DX news. As proof of his CW ability he was a long time member of FOC. A quick look at the DXCC Totem Pole shows he was right up the top with the best for many years.

A quietly spoken man of mild temperament, Fred's title of "Mr Efficiency Plus" fitted him well. Not so well known by the younger generation of amateurs, he will be sadly missed by his peers.

Fred Lubach VK4RF is survived by his YF Ethel, daughters Pamela, Lynette and Judith, and son Malcolm.

Alan Shawsmith VK4SS,
a lifetime friend.

ar

WIA Division Directory

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division Address	Officers		Weekly News Broadcasts		1998 Fees
VK1 ACT Division GPO Box 600 Canberra ACT 2601	President Hugh Blamings Secretary John Woolner Treasurer Les Davey	VK1YYZ VK1ET VK1LD	3.570 MHz LSB, 146.950 MHz FM each Sunday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet www.radio.amateur.misc newsgroup, and on the VK1 Home Page http://www.vk1.wia.ampr.org	(F) (G) (S) (X)	\$72.00 \$58.00 \$44.00
VK2 NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124) Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Geoff McGrorey-Clark Secretary Eric Fossey Treasurer Eric Van De Weyer (Office hours Mon-Fri 11.00-14.00) Web: http://marconi.mpcq.mq.edu.au/wia e-mail address: vk2wjl@ozemail.com.au Packet BBS: VK2WJ on 144.850 MHz	VK2EO VK2EFY VK2KUR	From VK2WJ 1.845, 3.595, 7.148*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup www.radio.amateur.misc , and on packet radio.	(F) (G) (S) (X)	\$69.00 \$56.00 \$41.00
VK3 Victorian Division 40G Victory Boulevard Ashburnton VIC 3147 Phone 03 9885 9261 Fax 03 9885 9296	President Jim Linton Secretary Barry Wilton Treasurer Rob Hailey (Office hours Tue & Thur 0830-1530) Web: http://www.tbsa.com.au/~wla/vic/	VK3PC VK3XV VK3NC	VK3BWI broadcasts on the 1st Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225(X) and 70 cm FM(R)s VK3ROU 438.225, and VK3RPU 438.075. Major news item at VK3WJ on Victorian packet BBS and WIA VIC Web Site.	(F) (G) (S) (X)	\$75.00 \$61.00 \$47.00
VK4 Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 5496 4714	President Rodger Bingham Secretary Peter Harding Treasurer John Presotto e-mail address: wiaq@brisbane.dialix.com.au Web: http://www.wiaq.powerup.com.au	VK4HD VK4JPH VK4WX	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 28.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) (G) (S) (X)	\$74.00 \$60.00 \$46.00
VK5 South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone 08 8352 3428 Fax 08 8264 0463	President Ian Hunt Secretary Graham Wiseman Treasurer Joe Burford Web: http://www.vk5wia.ampr.org/	VK5QX VK5EU VK5UJ	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Midura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide, (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday, 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.	(F) (G) (S) (X)	\$75.00 \$61.00 \$47.00
VK6 West Australian Division PO Box 10 West Perth WA 6872 Phone 09 351 8873	President Wally Howse Secretary Christine Bastin Treasurer Bruce Hedland-Thomas Web: http://www.faroc.com.au/~vk6wia e-mail address: vk6wia@faroc.com.au	VK6KZ VK6ZLZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825, 3.560, 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.350(R) Busseton and 146.900(R) Mt William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday, relayed on 1.865, 3.563 and 438.525 MHz; country relays on 146.350 and 146.900 MHz.	(F) (G) (S) (X)	\$62.00 \$50.00 \$34.00
VK7 Tasmanian Division PO Box 271 Riverside TAS 7250 Phone 03 6327 2096 Fax 03 6327 1738	President Ron Churcher Secretary Barry Hill Treasurer Mike Jenner	VK7RN VK7BE VK7FB	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.825 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs.	(F) (G) (S) (X)	\$74.00 \$60.00 \$46.00
VK8 (Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).					
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Note: All times are local. All frequencies MHz.

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